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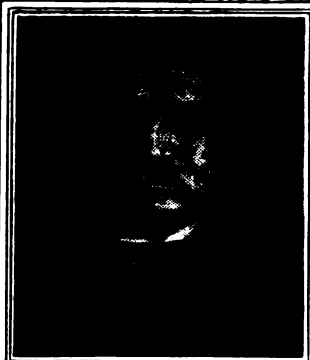
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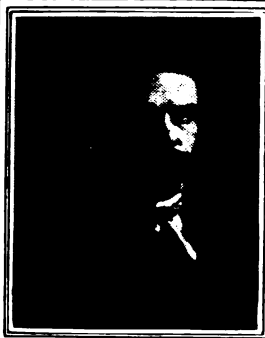
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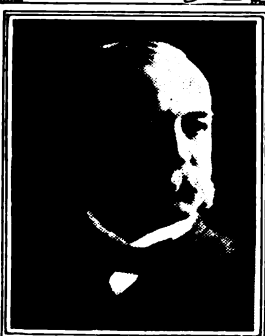
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Bulletin...

Chicago American school of correspondence

EDUCATION

IT is no disgrace to be poor; it is sometimes a disgrace to be rich; it is always a disgrace to be ignorant. Ignorance implies not lack of opportunity, but lack of ambition. A good education is a guarantee of a man's willingness to work, and his ability to accomplish. There is no royal road to learning; every step of the way must be won by hard, sweaty labor. But an education is worth every effort that it takes—not for the mere dollars and cents that it will bring, but for the power that it gives a man to get and enjoy the best things in life.

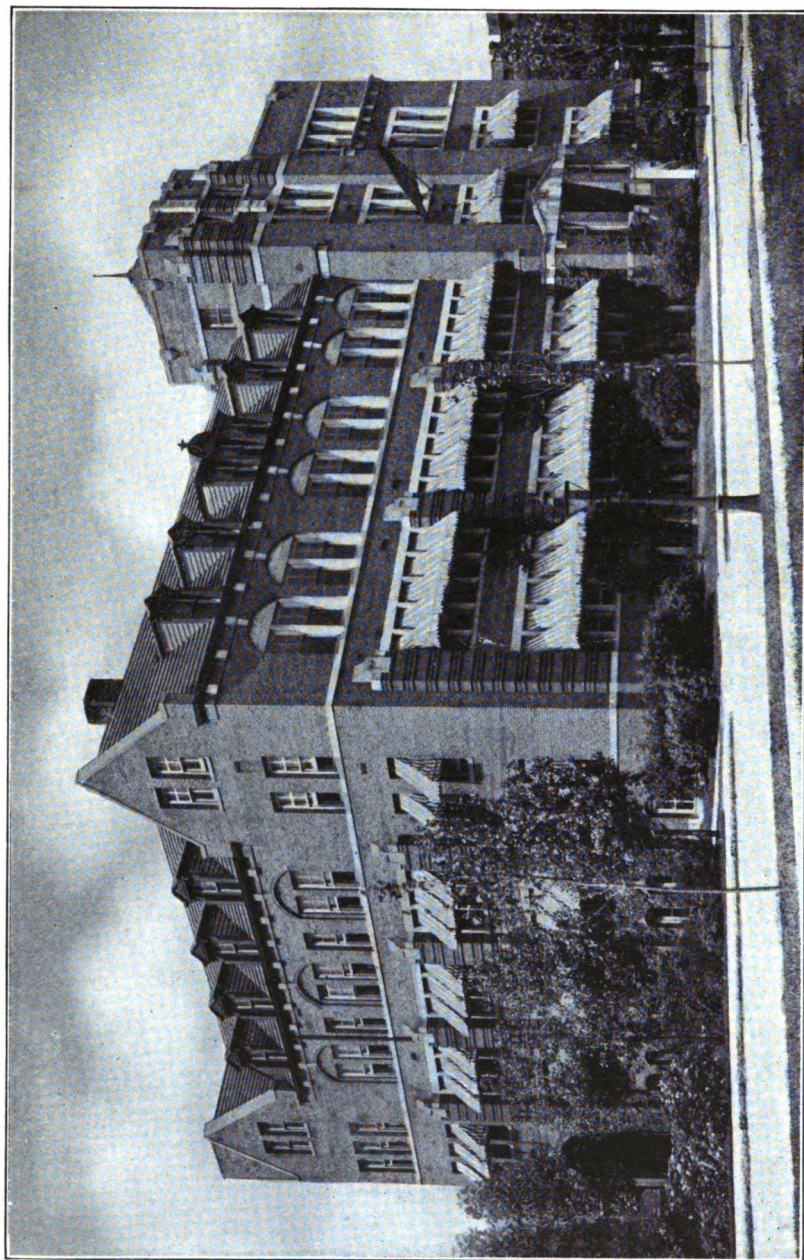
COMPLETE BULLETIN
of the
American School *of*
Correspondence

Published quarterly for students, graduates, and others
interested in the School and
its work.



CHICAGO, U. S. A.

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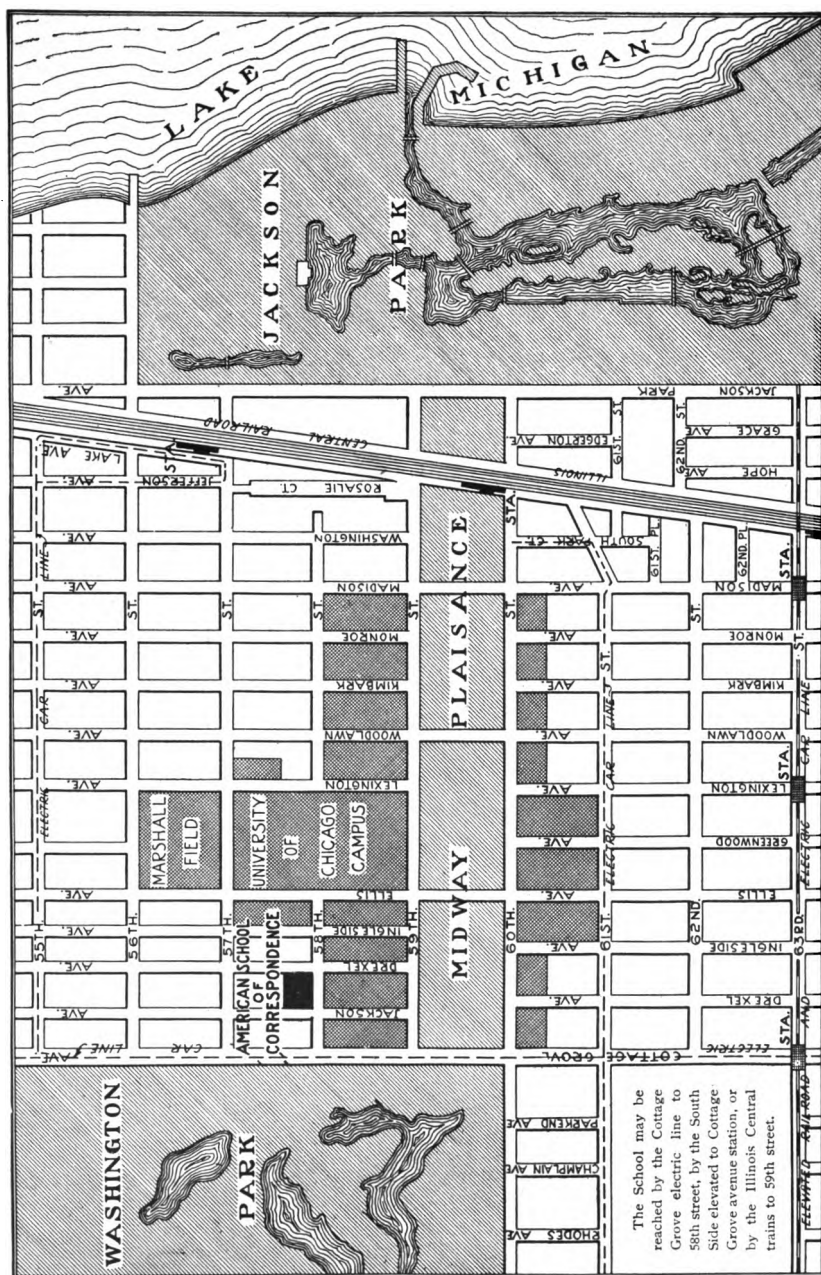


ADMINISTRATION BUILDING, AMERICAN SCHOOL OF CORRESPONDENCE

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GENERAL INFORMATION

Success

A MAN'S value in life is determined not so much by what he does as by how well he does it. A good worker is worth more than a poor manager.

Success does not mean merely wealth, power, and position—those things are merely incidental. It means the attainment of the thing aimed at.

No man knows what he can do until he tries. He who ventures nothing gains nothing, either in money or in character. Success comes only by striving, by bending every effort to the accomplishment of the end desired. The man who wins is the man who tries to win.

General Information

A BIT OF HISTORY

THE American School of Correspondence was founded in Boston in 1897, as an "institution of learning" under a charter from the Commonwealth of Massachusetts. Its early work was conducted with the advice and assistance of instructors of Massachusetts Institute of Technology and Harvard University; thus at the beginning it set the high educational standard which it has since maintained. In

Beginning 1902 the School became associated with Armour Institute of Technology at Chicago, and for five years conducted its work in co-operation with that institution. In 1907, having outgrown its quarters, the School erected, in the neighborhood adjacent to The University of Chicago, its present administration building, especially designed for correspondence work.

An early announcement of the School states that it was "founded to meet a general demand among engineers and machinists for a strictly technical school furnishing the highest grade of instruction in steam and electrical engineering and machine shop practice"; and made considerable of the fact that it did not attempt to "teach everything." The School originally offered only six courses; but the immediate success of its work brought it more than 7,000 students the first year, and necessitated the gradual broadening of its scope. In 1901 it began to offer courses in subjects allied with the original six, and to list special courses in general subjects; and in 1903 it gathered its scattered courses into definite Departments. Since then it has made other important additions to its curriculum, including Departments of Law, Commerce, and Fire Insurance; but it has always maintained its original belief that some subjects cannot be successfully taught by mail.

Today the American School offers almost a hundred different courses, and gives instruction in every part of the English-speaking world; it numbers its students by the tens of thousands, and its

graduates by the thousands. It stands pre-eminent in the high class of students that it enrolls, the thorough instruction that it offers, the practical success of its graduates, and the number and position of the well known men—
Present employers, pastors, educators, engineers, lawyers and business men—who are glad to recommend the School, and to forward its work. It has succeeded because it has been true to its principles of giving its students the instruction for which they enrolled, and depending upon its usefulness for its growth.

PRINCIPLES AND AIMS

THE American School of Correspondence is based upon the principles that every man is entitled to a good education, and that, if he cannot go to school, the school should go to him. It encourages every man to make the most of his opportunities by improving his spare time, and shows him in a practical way how to do it. It has made correspondence

Education for All study so practical that its students graduate from their studies into well paid positions, and has put its courses within the reach of any man who possesses ambition and the will to work. It has gained the good will and the practical encouragement of many of the most successful men in the professions which it teaches, and of employers and business men throughout the country.

The School draws its students from both sexes, from all ages, and from all walks of life. It has on its rolls college and technical school graduates and professors. It has boys and girls in their middle 'teens, and men of fifty and sixty. It draws principally, however, from young men and women of the great middle class, who realize the necessity of a good education, but who are unable to attend resident schools.

A man values a thing according to what it costs him. It is said repeatedly, and with considerable truth, that the man who works his way through college gets more real good out of his college course than the man who merely has to ask for what money he wants.

Working for an Education An overwhelming majority of correspondence students pay their own expenses, either by working a little harder or by living a little closer; and practically all of them make many sacrifices in order to get the time for their studies. When one considers their enthusiasm, the odds that they have overcome, the great things that they have accomplished, and their constantly increasing numbers, he must believe that the correspondence school occupies a useful and honorable place in the educational world.

BUILDING AND LOCATION

THE Administration building of the School is worthy of particular mention, as it is a concrete expression of the growth and success of the School. It is a four-story and basement structure, built of red pressed brick with gray stone trimmings, and a roof of green tile. It is about twice the size of the average high school building, but it holds no students—the

Building space is occupied by officers, instructors, and by the many persons required to carry on the affairs of the School. The building is light, airy, and pleasant throughout—an ideal place for work and study. Photographs reproduced on other pages give a good idea of its general appearance, and its quiet but attractive scheme of decoration.

The building is equipped throughout with every modern device for facilitating the work of the School. An inside telephone system

Conveniences puts each man into instant communication with any other man or Department; a half hourly messenger service brings him his mail, or relieves him of what he has completed; the outgoing mail is sent hourly to the post office. As a further means to facilitate work, the School maintains many conveniences for the comfort and physical well-being of its force. Among these are a free circulating library containing approximately 1,000 volumes of current fiction of the better class; free umbrellas when a sudden shower comes up at closing time; a wholesome, "home-cooked" luncheon at exactly what it costs to prepare; a comfortable lunch room, and free tea and coffee, for young women stenographers and clerks who bring their own lunches.

The School is located seven miles from the City Hall, in the old Hyde Park district of Chicago's great South Side, as shown in the map on page 4. One block west is Wash-

Location ington Park; one block south is the Midway Plaisance of the World's Columbian Exposition, now a part of the South Park boulevard system; two blocks east is the campus of The University of Chicago. This situation, away from the distractions of the busy "down town" center, and miles from factories, insures the quiet and clear air necessary for the proper conduct of educational work.

ORGANIZATION AND PERSONNEL

THE American School of Correspondence is chartered under the same laws as a State University. It is conducted as an educational institution, for the benefit of its students; not as a commercial enterprise, for the benefit of stockholders. The general conduct of the School is vested in the Board of

Trustees and Cabinet

Trustees, of which the President is *ex officio* the head. This Board determines the general policies of the School, both educational and financial. In its educational work it has the assistance and counsel of an Advisory Board, comprising men who represent many different lines of work, and who have been chosen because of their high standing in their respective professions. The actual conduct of the School is in the hands of the Cabinet, comprising the President, Secretary, Treasurer, and the heads of the five big Departments into which the School is divided for administrative purposes.

The American School staff comprises, as officers, instructors and editors, men who have been graduated from the best known universities and technical schools in the country, or who have gained their knowledge by years of practical experience. The President received his Ph. B. and A. M. degrees from Oberlin College, and his LL. B. degree from Harvard University; the Secretary took his B. S. degree at the University of Illinois, and his Ph. D. degree at the University of Chicago; the Head of the Instruction Department took his undergraduate work at Massachusetts Institute of Technology, and was for seven years a research assistant at Harvard Observatory. The School employs as instructors men only, as they alone have the training and the broad understanding of the personal instruction necessary in correspondence teaching. All of them are either college graduates, or men of long practical experience in their particular lines. Many of them are conducting classes in the neighboring resident schools and universities. Others have proved their teaching ability by the authorship of textbooks which are in current use in both resident and correspondence schools. While the School offers no class room work, students may consult their instructors personally by calling at the School.

The textbooks used in its courses are written especially for the School by men highly regarded in their respective fields. Among them are expert practicing and consulting engineers, leading members of the American bench and bar, expert public accountants, managers of great businesses, recognized specialists in fire insurance organization and practice, and prominent members of the faculties of the great American colleges and universities—a grand total of more than two hundred writers. For the production of these textbooks, and other printed matter necessary to its work, the School maintains a corps of experienced editors, proof readers, etc. A new textbook can be placed in the hands of the student within thirty days from the time the manuscript is received from the author; yet this Department is working continuously to get out new texts and to revise the old ones that cover the various subjects taught by the School, now almost five hundred in number.

The financial and business affairs of the School are in charge of the Treasurer, who is also head of the Accounting Department.

Textbook Department This Department is charged with the collection of the thousands of student accounts, and does the bookkeeping incident to such a large work. Most students find it easier to pay for their courses on

Accounting Department the monthly installment plan, and it requires the services of many clerks and stenographers to handle the large number of items and correspondence arising out of so many open accounts. The School employs no collectors; it conducts its business with its students, like its instruction, by mail. In this Department are kept the records and statistics of the School; it also serves as a clearing house for all other Departments by receiving all incoming mail, which is opened, sorted and distributed by half-hourly messenger service to the proper persons in the various Departments in the Administration Building.

The Extension and Publicity Departments, though distinct organizations under separate heads, have a common purpose—to make it impossible for any one to think of cor-

Extension and Publicity respondence instruction without thinking of the American School as its chief exponent.

Since the School employs no agents, it must depend upon these Departments for the enrollment of new students.

The Extension Department compiles Bulletins, prepares booklets of information, writes letters, and answers all inquiries regarding terms and courses. Its chief work is handling the thousands of inquiries prompted by the recommendations of satisfied students, and of men of influence who appreciate what the School is doing. The Publicity Department prepares and places all advertisements of the School that appear in magazines and newspapers. It has been said that the announcements of the American School prove that an educational institution can advertise effectively, and still maintain the dignity expected of an institution of learning.

In addition to the five chief administrative branches described above, there are the Record, Stenographic, Mailing and Shipping Departments, which, as their titles suggest, are

Other Departments

concerned chiefly with the handling of the mail, and general office work. The School is second only to the great Chicago mail order houses in the volume of mail matter that it handles; yet 90% of the communications received from students and inquirers are answered within twenty-four hours. To make this possible requires a large force of stenographers; while the Mailing Department has electric driven machines capable of printing, folding, sealing, stamping and tying 5,000 letters an hour. In addition, it mails each day thousands of Bulletins and booklets, textbooks, drawings and corrected examinations. Altogether the School receives and sends much more mail than is handled by many a post office serving a town of 20,000 inhabitants.

The photographs reproduced on other pages show that the several Departments of the School require a large operating force. During the greater part of the year the number averages 250

Operating Force

people; this force is reduced during the summer months, when both students and inquirers show less interest in study. While the School is conducted by men for men, with men instructors, it employs many young women in the various lines that they have made peculiarly theirs—stenographers, typists, checkers, bookkeepers, file clerks, addressers, mail clerks, etc. The top floor of the building is given over almost exclusively to the Mailing and Stenographic Departments.



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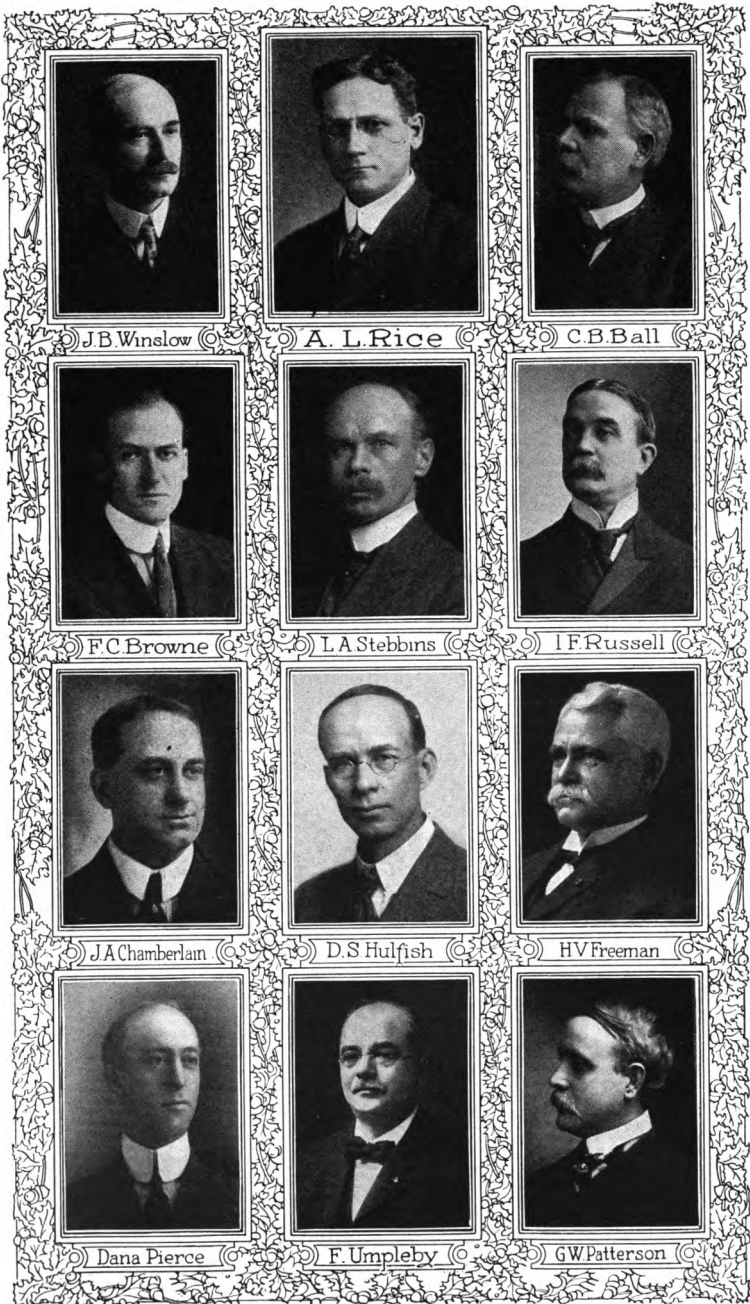
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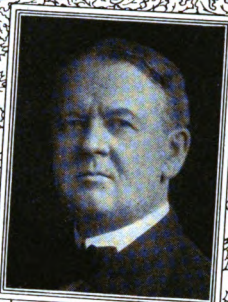
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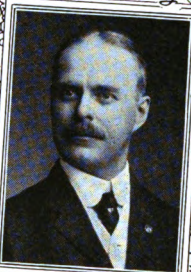
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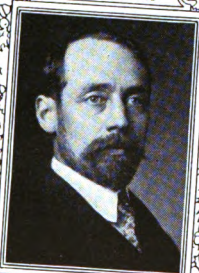
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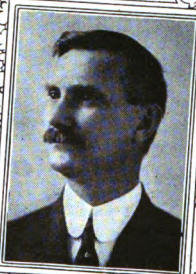
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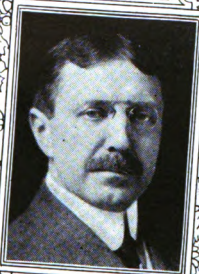
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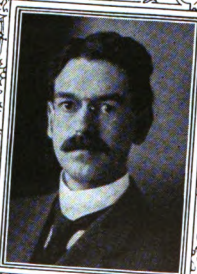
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Howard A. Burgess

has completed the general and special studies required and has passed with High Credit the examinations prescribed for the course in

Electrical Engineering

In Testimony Whereof the American School of Correspondence awards this
Diploma

Given under the seal of the School at Chicago, Illinois, this month day
of February, A.D. one thousand nine hundred and one.

Dean Webster, Secretary



Howard A. Burgess

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Correspondence Teaching

TERMS OF ENROLLMENT

THE American School of Correspondence has no entrance examinations. As a rule, each student is expected to begin with the elementary subjects necessary for an understanding of the course which he wishes to pursue; if he has been over the elementary work before, he probably needs to review it; if he has not had it, he must master it before he can advance.

Entrance Requirements If, however, he is fresh from the study or practice of any particular branch, he will, upon the submission of satisfactory credentials, be given full credit for work already covered, and a proportionate discount on the cost of the course. Similarly, a graduate of the School, who enrolls for a second course, is given full credit toward his Diploma for any subjects that he has already covered, and is asked to pay for only the new work. The enrollment blank that the student is asked to sign is a simple agreement to study diligently and to pay regularly; it contains no threat of legal prosecution if he is a little slow with his remittances. There are only two methods of payment—cash, or \$5.00 a month. If the student pays cash in full with enrollment, he is allowed a discount of 10% from the list price of the course—just what it costs to collect the account by mail.

The tuition fee covers matriculation fee, tuition, instruction books, consulting privilege, inquiry blanks, return envelopes, Diploma, and all postage to the student, including corrected examinations—in short, every expense, except for special apparatus, as explained below. The student is required to prepay all matter sent to the School. The tuition does not include drawing instruments and materials, typewriter, physical apparatus, or a chemical laboratory outfit. The student needing such things can purchase them himself, or order them through the School at exact

cost. All express charges on special outfits are paid by the student. Students in Mechanical Drawing can be supplied with an outfit of drawing instruments and materials, prepared especially for use in American School courses, for \$6.40. Students in Shorthand are supplied free with notebooks for practice, and students in Bookkeeping are given sufficient ledger and journal paper to start them in their work. Students in Typewriting, who have no machine available for practice, can rent one through the School for \$3.00 a month, upon giving satisfactory references. A deposit of \$10.00, or a proper guarantee, will be required; this deposit will be refunded in full upon the return of the typewriter in good order. College Preparatory students taking Physics will be loaned a laboratory outfit, worth \$100.00, on a deposit of \$10.00, which is refunded, minus breakage, when the outfit is returned; those taking General Chemistry will be supplied with a complete laboratory outfit of apparatus and chemicals for \$18.50. No outfit is required for Practical Physics or Chemistry of Combustion.

The student is expected to complete his course within five years from the date of enrollment. This term is considerably longer than the time usually required by a student; but it is made to cover every possible delay from sickness, "overtime" work, and other contingencies that cannot be foreseen. At the end of five

Terms of Enrollment

years the student has no further claim upon the School. Money paid on tuition will not be refunded to the student who stops work. The student's enrollment places upon the School an obligation to provide for his instruction, and upon the student an obligation to pay for it; and the student must bear the loss if he cannot benefit by that instruction. The student does not, however, forfeit his scholarship by getting a little behind in his payments. If he has shown himself an earnest and diligent student, and will inform the School of the reason for his delinquency, he will be continued in good standing, and be permitted to send in his examinations regularly. It is not the policy of the School to deprive any man of the opportunity for an education because he is a little slow in meeting his financial obligations. Such a man usually has most need of the special training that the School offers.

METHODS OF INSTRUCTION

THE American School conducts its work by three means: first, by the use of specially prepared instruction books adapted to the needs of the correspondence student; second, by requiring the student to submit regular examinations or test papers; third, by giving each student such personal and individual assistance as he needs. It is not the practice of the American

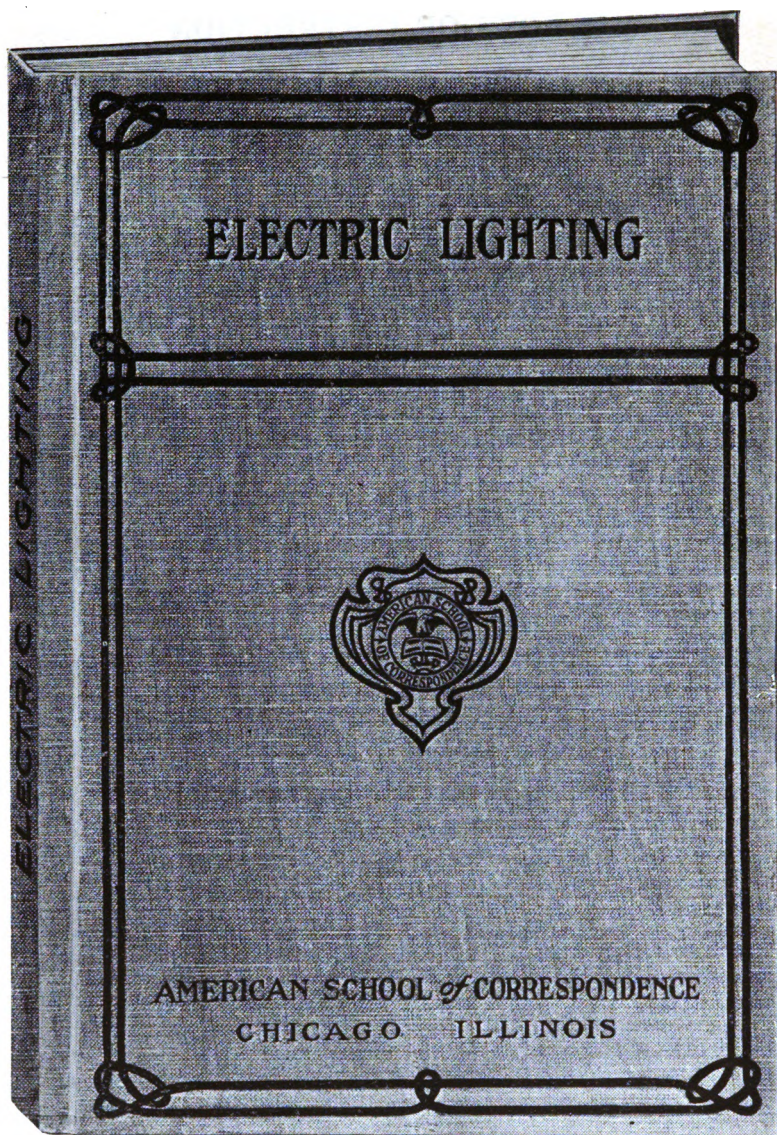
Three Methods

School, or of any other recognized educational institution, to permit its students to use "keys" or sheets of answers to the problems presented for their solution. The use of keys greatly lessens the time and expense required for the proper handling of examinations; but the injury worked upon the earnest student cannot be excused or palliated by any saving to the school in which he put his faith.

It is impossible to teach by correspondence with standard textbooks, because the average standard textbook is designed to be rather a guide than a teacher. American School

Special Textbooks

instruction books contain, in themselves, all the supplementary explanation that is supplied by the personal instructor; and they contain many more practical drawings, diagrams, tables, problems, and other like helps, according to the nature of the subject. Thus they combine the teaching ability of both the standard textbook and the personal instructor. These texts have a particular value to the student because they contain in permanent form both the general principles and the application and working out of these principles that is usually done in the class room; so that the student has always in his possession the exact explanation of his instructor. These instruction books are printed in clear readable type on good book paper, and are uniformly and substantially bound in heavy cloth. The pages measure $5\frac{1}{2}$ by $8\frac{1}{2}$ inches, and they average eighty pages to the book. Subjects which require more space than this are usually divided into two or more instruction books, for convenience in handling. The instruction books become the property of the student as they are delivered to him. The teaching value of these instruction books is shown by the fact that certain texts have been approved for class room use in many of the leading



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resident schools, and in shop schools and manual training classes; while the texts, bound and indexed for reference, are the recognized authorities in public and private libraries.

Each student of the American School is in a class by himself; as soon as he has mastered one subject, he can take up the next, but he is not forced ahead faster than he should go because the rest of the class is ready to go on.

Personal Instruction In case he meets with some problem or principle which is not quite clear, he uses the inquiry blank to state his difficulty, and the instructor gives him a detailed explanation of the vexing point. The School places no limit upon the number of such inquiries that a student may make; except that he is not allowed to make any inquiry on examination questions. These inquiries correspond to the personal help which the resident school student receives from his instructor. The student is also entitled to special advice on problems and questions which may arise in his everyday work, whether or no they are covered by the course which he is taking. This assistance is of great value to the young man who is working and studying at the same time; and to the more advanced man who is taking special work, and can thus get expert advice on any related subject taught by the School. This consulting privilege is continued in force during the life of the graduate.

Upon enrolling, the student is sent the first three or four instruction books, with instructions for their use, inquiry blanks, and such information as he may need to start him right. He is also given a Study Record card for each book, which he is asked to fill out and return with his examination, both as an accurate record of the actual time that he is studying, and as a guide to his instructor in determining the ability of the student to absorb knowledge.

How the Work Is Conducted Each instruction book contains in the back a series of questions, which the student is required to answer from his own knowledge, as his examination on that particular subject. Each time that he submits a satisfactory examination, he is sent the next instruction book in his course, so that he always has on hand two or three instruction books ahead of the one on which he is working, and is not liable to delay or loss of time through the time taken to get the book to him, or the possible miscarriage of

the mails. The student is supplied with up-to-date instruction books as fast as he is ready for them; but he is never sent a complete set of instruction books upon enrollment; whether or no he pays cash down. He is required to take up the subjects in the order in which they are listed, as by this arrangement he is certain to get first the elementary subjects which are prerequisite to more advanced work. In the Engineering courses, however, Mechanical Drawing may be taken any time after the completion of Practical Mathematics and Practical Physics.

The student's examination reaches the School in a mail sack containing hundreds of other examinations and inquiries from all over the world. This mail is opened in the

Handling Examinations

Accounting Department by a mail clerk; in case the student has sent in a remittance on tuition, or for some special purchase which he wishes the School to make for him, the amount is noted on the letter, or on the examination itself, and entered to the student's credit on the Daily Cash Book. The examination is referred to the Record Department, where it is identified by clipping to it the student's record card and the folder containing all correspondence that the School has had with him. Thence it goes to the Instruction Department, to the desk of the head of the department of study in which the student is engaged, and is referred by him to the instructor best fitted to handle it. When the instructor has corrected and graded it, it is returned to the Record Department, where the grade is recorded, the student card and correspondence detached and returned to the files, the Certificate of Examination written, and the next textbook ordered sent. Thence the examination goes to the Mailing Department, to be enveloped, sealed, stamped, and sent on its way back to the student, usually within twenty-four hours from the time it was received.

In correcting the examination the instructor goes over each answer in detail, makes whatever suggestions or corrections are needed, and, if necessary, writes the student a

Correcting the Examinations

special letter explaining any points that he may have missed, and advising him how he can improve his work. The corrections and criticisms are made very carefully and individually; they cover errors in facts, figures, punctuation, capitalization, and grammar. If the

examination has not been entirely satisfactory, the student is required to work over again the part on which he failed. He is shown just where he made his mistake, and told how to overcome it; but he is not permitted to advance until he has mastered each subject in proper order. In marking the student's work, the School has adopted the system in vogue in most colleges, and uses the grades "Perfect," "Excellent," "Good," or "Fair." These grades correspond to the following percentages: "Perfect," 100%; "Excellent," 90 to 100%; "Good," 80 to 90%; "Fair," 75 to 80%. The percentages obtained by the student in each subject are kept at the School, and the student's average per cent is given to him upon graduation. If the student has sent in a special inquiry on some unusual subject, it is referred to the instructor specializing in that line of work. He looks up the various authorities on the subject so as to get all the information possible, and writes a special letter of explanation; if the matter can be simplified or clarified by diagrams, he prepares a special sketch, which is carefully rendered by one of the many expert draftsmen employed by the School, and enclosed with the letter of explanation.

As a rule, the student is required to take a final examination before being awarded a Diploma or Certificate of Proficiency. If,

Final

Examination

however, his work has earned him high grades throughout his course, no final examination is required. After having completed his course, and having satisfactorily passed all the examinations, the student is awarded a Diploma or Certificate of Proficiency certifying to these facts. This document constitutes a guarantee of proficiency which is recognized by employers as an indisputable proof that the bearer is a man who has done his best to improve his condition, who is not afraid to work, and who is determined to advance in his chosen work. The School exacts no graduation or Diploma fee.

Name Pearson, Edward B Occupation Machinist Age 22
 Street _____ Cert. No. 57203 Date 2/8/09
 City & State Fredericktown, O. Tuition \$120.00 PAID Ledger No. 125478
 Bus. Ad. Pearson & Co Enrolled by Technical World

Student Button,

SUBJECT	EXAM.				Follow Up /
	SENT	REC'D	RET'D	%	
Gas Producers					. . 2
Gas & Oil Eng. I					. . 3
Gas & Oil Eng. II					. . 4
Self. Pro. Ry. Cars					

Average % _____ Diploma Awarded _____

Face of Student Record Card

ELECTRICAL ENGINEERING														
SUBJECT		EXAM.			SUBJECT		EXAM.			SUBJECT		EXAM.		
	SENT	REC'D	RET'D	%		SENT	REC'D	RET'D	%		SENT	REC'D	RET'D	%
Pract. Math. I	2-8	2-17	2-19	98	Electric Lighting	2-24	3-30	4-1	93	D. C. D. II Cal				
Pract. Math. II	*	3-3	3-4	93	Electric Welding	4-1	5-13	5-27	85	D. C. D. III Des				
Pract. Math. III	*	3-15	3-15	90	Elec. Rys. I	4-1	9-14	9-21	75	Types of Boilers				
Pract. Phys. I	2-8	3-27	3-29	95	Elec. Rys. II	4-14	10-19	10-20	92	Heat				
Pract. Phys. II	3-4	4-28	4-29	78	Elec. Rys. III	5-28	2-26	3-2	75	Boiler Acc. I				
Mech. Draw I	3-15	6-9	6-10	98	Elec. Rys. IV	9-21	3-8	3-12	92	Boiler Acc. II				
Mech. Draw II	2-25	4-8	4-12	80	Algebra I	3-2	3-20	3-21	78	Pumps				
Mech. Draw. III	2-25	5-19	5-24	85	Algebra II	3-2	3-27	3-29	91	Mechanism				
Chem. of Comb	4-12	12-10	12-20	80	PI Geometry	3-12	4-6	4-8	90	*Mech. Draw IV	1909	1910	1910	75
Elem. of Elec.	3-4	4-28	4-29	78	Trig. I. & Log	3-21	5-2	5-2	82	*Mech. Draw. V	12-13	4-29	4-30	
Elec. Current	10-19	11-1	11-2	94	Alt. Cur. Mach. I	3-29	5-16	5-17	85	*Mech. Draw. VI	1910	4-30		
Elec. Meas. I	4-29	11-18	11-19	95	Alt. Cur. Mach. II	4-8				Mach. Design I				
D. C. D. I. Prin.	6-10	12-20	12-21	93	Alt. Cur. Mach. III	5-2				Mach. Design II				
Prin. D. C. M.	11-19	12-29	12-30	85	Alt. Cur. Mach. IV	5-17				Steam Engine I				
Types D. E. M.	12-21	1-6	1-9	90	Alt. Cur. Mach. V					Steam Engine II				
Mgt. D. E. M. I	12-30	1-26	1-27	90	Alt. Cur. Mach. VI					Steam Turb. I				
Mgt. D. E. M. II	1-7	2-11	2-12	93	Elec. Meas. II					Steam Turb. II				
Storage Batteries	1-27	2-21	2-24	90	Power Stations					Indicators				
Electric Wiring	2-12	3-10	3-12	96	Power Trans.					Valve Gears				

Back of Student Record Card

ANSWERS TO FREQUENT QUESTIONS

THE American School employs no agents or representatives. It believes that agents have no place in educational work, and that it is not fair to the student to pay out to the agent who enrolls him, 25% of the amount that he paid for instruction. The School asks no better representatives than the students

whom it has helped, and the friends whom it has made. It secures nearly one-half its annual enrollment through the influence and recommendation of present students or graduates, and of well known men—employers, pastors, educators, lawyers, engineers, and business men—who are glad to recommend the School, and to forward its work.

If the inquirer states what position he is working for, the School can tell him what course will fit him for that position; but it is evident that it requires a considerable knowledge of a man's education, natural ability, habits, likings, etc., to say offhand that a certain course is just the one for him. If the inquirer cannot

What Course

decide just what course will be best for him, he should take the one which seems most nearly to meet his present needs. The preliminary work is much the same, and if he wishes to change later it will be his privilege to do so. He will be given credit toward the new course for all work that is identical, and a discount for what he has paid for the work that is duplicated. Every trade or profession offers many good positions to the man who is qualified for them by liking and training. It is, however, a very serious mistake for a man to take up a branch of work for which he has no real liking, just because it seems to offer greater opportunities. A man can do his best at the work that he likes best.

It is false reasoning for a young man to delay enrolling, with the idea that he ought to work a while at his trade before he tries to study it. If he waits until he gets a job, it will

Practical Experience take him just so much longer to get started, and he will have less time to study than he has now.

If, on the other hand, he makes the start now, he will be through with the preliminary studies, and ready to get at the subjects that concern his daily work. He will find it much easier to get a position if he already knows something about the

work expected of him. Every employer expects to have to teach his new men his ways, but he expects them to understand general principles. And a young man can get much more valuable experience out of practical work if he knows in advance what he is going to do, than if he first does it and then tries to find out why.

The courses of the American School are planned to take the student over a certain number of subjects; he pays for the work covered, not for the time he requires to complete it. He binds himself to no definite number of hours of study, though the School asks him to endeavor to average ten hours a week, and never to fall below three hours a week. Studying ten hours a week, the average student can complete an instruction book in three weeks, or eighteen instruction books in a year. This average, applied to the number of instruction books in any given course, gives the approximate time required for the completion of that course. There is, however, no limit put upon the speed with which the student may advance, provided that he keeps his work up to the standard required by the School.

The American School cannot guarantee positions, nor does it conduct an employment agency; but it does guarantee to fit a man for the position that he wants to hold. Any school can guarantee positions if it makes no stipulation regarding the kind of work to be done or the salary to be paid; but such a guarantee is a method of securing enrollments so questionable that no reputable school would stoop to it. However, the American School neglects no opportunity to serve its students. Large manufacturing companies and business houses are constantly requesting the School to recommend students who are fitted for their particular work, and that recommendation is often the only proof of fitness required. Employers have learned that students of this School are trained for practical work, and that they will not be recommended unless they are known to be capable of filling the position. Such a reputation is far more valuable to the student than a general guarantee of a "situation" that any one could fill.

Time Required

Securing Employment

**DEPARTMENTS OF
INSTRUCTION**

The Student's Creed

I WILL blot out of my life the failures that come from wasted hours, and write into it the successes that come from time well spent.

I will keep life's page clean, and fill it with the record of knowledge gained.

I will fix my eyes on the goal of my ambition, and hold my hand to its task.

I will work hard, hope high, and live up to the best that is in me; then I can write at the end, "Well done!"

Departments of Instruction

DEPARTMENT OF ARCHITECTURE

(Opened to students in 1903)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

ARCHITECTURE

Outline on page 41

A complete course in the design and construction of modern buildings, comprising all the work of the Department. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical, architectural and structural drawing; special work in drawing and rendering required by the architectural draftsman; an analytical study of the classical orders of architecture upon which modern design is based; all branches of carpentry work, including framing, joining, stairbuilding, and the use of the steel square; interior finishing, and the selection of interior hardware; the possibilities and limitations of masonry, reinforced concrete and steel construction in modern buildings; the problem of the factor of safety; modern systems of house heating and ventilating; methods of electric wiring and lighting that satisfy the underwriters' requirements; the details of profitable estimating, drawing up contracts and writing specifications, and the legal side of building; the duties of the building superintendent or the supervising architect.

This complete course is recommended for every man interested or engaged in building work, who does not already possess a thorough and systematic knowledge of the subject. It is a mistake for any man entering or engaged in building work to confine his knowledge to one branch; even if he intends to specialize, he should have a working knowledge of the whole subject, both to guide him in his choice of a special line, and to give him an understanding of the relation of his specialty to the other branches. The man who

is ambitious to be an employer or superintendent cannot hope to direct other men unless he knows what they can do, and how it should be done. This course will give the inexperienced man a thorough training in all branches of building practice, or enable the man with practical experience to systematize his knowledge, and master the branches in which he has had no experience. It will fit the student to be a designing, consulting or supervising architect, building superintendent, or general contractor and builder.

In California, Colorado, Illinois, Louisiana, New Jersey and Texas a State law requires that every plan submitted to the building department for a license to build shall bear the stamp of a licensed architect; other States are expected soon to enact similar laws. Any man is permitted to plan a building which he will himself erect; but the plans must be approved by an architect who has satisfied the State of his knowledge of building laws, underwriters' requirements, use of building materials, sound construction, etc. The architectural student is advised to investigate the requirements of his State, if it is included in the list above. A letter of inquiry addressed to the Board of Examiners for Architect's License, at the State Capital, will bring full information.

ARCHITECTURAL ENGINEERING

Outline on page 42

A course in the heavy construction work involved in the erection of all types of large modern private and public buildings, such as "skyscrapers," grain elevators, etc. Omits the work in design and interior finishing. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical, architectural and structural drawing, including perspective drawing; all branches of carpentry work, including framing, joining, stair-building, and the use of the steel square; the possibilities and limitations of masonry, reinforced concrete and steel construction in modern buildings; the problem of the factor of safety; methods of electric wiring and lighting that satisfy the underwriters' requirements; the details of profitable estimating, drawing up contracts and writing specifications, and the legal side of building; the duties of the building superintendent, or the supervising architect. Recom-

mended for the mason, brick layer, concrete worker, carpenter, steel worker, or the man interested in these trades, who wishes a thorough knowledge of heavy construction work. Prepares for position as building superintendent in all branches of masonry, concrete, steel work and carpentry.

CONTRACTING AND BUILDING

Outline on page 43

A course in the erection of all types of private and public buildings which do not involve steel construction, such as flat buildings, stores, dwelling houses, etc. Omits the work in design and steel construction. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and architectural drawing; all branches of carpentry work, including framing, joining, stair-building, and the use of the steel square; interior finishing, and the selection of interior hardware; the possibilities and limitations of masonry and reinforced concrete in modern buildings; the problem of the factor of safety; modern systems of house heating and ventilating; methods of electric wiring and lighting that satisfy the underwriters' requirements; the details of profitable estimating, drawing up contracts and writing specifications, and the legal side of building; the duties of the building superintendent, or the supervising architect. Recommended for the sub-contracting mason or carpenter who wishes to handle the whole contract; for the mason or carpenter who wishes to work himself up as a builder; and for the ambitious foreman in any of the trades covered who wishes to handle larger jobs. Prepares for directing office and construction work of a general contracting company, and for position as building superintendent in all branches of wood and concrete work.

REINFORCED CONCRETE

Outline on page 44

A special course in the use of reinforced concrete as a building material. Includes but little general building work, and is designed for men experienced in other branches who wish to work up on this specific subject. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing; the possibili-

ties and limitations of masonry, reinforced concrete and steel construction in modern buildings; the problem of the factor of safety; the details of profitable estimating, drawing up contracts and writing specifications, and the legal side of building. Recommended for the ambitious contractor, carpenter or mason, as a quick means of getting a working knowledge of concrete construction. Prepares for position as concrete engineer.

CARPENTRY

Outline on page 44

A special course in the design and construction of wood buildings, and interior finishing. Covers a clear treatment of the necessary mathematics; practice in mechanical and architectural drawing; special work in drawing and rendering required by the architectural draftsman; all branches of carpentry work, including framing, joining, stair-building, and the use of the steel square; interior finishing, and the selection of interior hardware; the duties of the building superintendent, or the supervising architect. Recommended for the working carpenter who wishes to understand all the special branches of his trade, and for the inexperienced man who wishes a general knowledge of carpentry. Prepares for position as boss carpenter, or for special work in interior wood finishing.

ARCHITECTURE

70 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 37. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part II	103
Practical Mathematics Part II....	138	Masonry and Reinforced Concrete Part III	103
Practical Mathematics Part III....	138	Masonry and Reinforced Concrete Part IV	103
Practical Physics Part I.....	138	Masonry and Reinforced Concrete Part V	103
Practical Physics Part II.....	138	Statics	103
Mechanical Drawing Part I.....	137	Steel Construction Part I.....	104
Mechanical Drawing Part II.....	137	Steel Construction Part II.....	104
Mechanical Drawing Part III.....	137	Steel Construction Part III.....	104
Freehand Drawing	99	Steel Construction Part IV.....	104
Architectural Lettering	99	Roof Trusses	104
Shades and Shadows.....	99	Structural Drafting Part I.....	104
Perspective Drawing	99	Structural Drafting Part II.....	104
Architectural Drawing Part I....	99	Practical Problems in Construction	105
Architectural Drawing Part II....	99	Heating and Ventilation Part I... ..	125
Rendering in Pen and Ink.....	99	Heating and Ventilation Part II.. ..	125
Study of the Orders Part I.....	100	Heating and Ventilation Part III. ..	125
Study of the Orders Part II.....	100	Plumbing Part I.....	126
Study of the Orders Part III.....	100	Plumbing Part II.....	126
†Hamlin: History of Architecture		Plumbing Part III.....	126
Carpentry Part I.....	100	Sheet-Metal Work Part III.....	126
Carpentry Part II.....	100	Sheet-Metal Work Part IV.....	126
Carpentry Part III.....	100	Electric Wiring	112
Carpentry Part IV.....	100	Electric Lighting	112
Steel Square	101	Underwriters' Requirements Part I ..	128
Stair-Building	101	Underwriters' Requirements Part II ..	128
Plastering	101	Building Code	127
Painting	101	Estimating Part I.....	101
Hardware	101	Estimating Part II.....	101
Algebra Part I.....	139	Contracts and Specifications Part I ..	102
Algebra Part II.....	139	Contracts and Specifications Part II ..	102
Plane Geometry	139	Legal Relations	102
Logarithmic Tables	139	Building Superintendence Part I.. ..	102
Trigonometry Part I.....	140	Building Superintendence Part II. ..	102
*Graphs	140		
Strength of Materials Part I.....	103		
Strength of Materials Part II....	103		
Masonry and Reinforced Concrete Part I	103		

*Optional work

†Standard textbook

Tuition \$150.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ARCHITECTURAL ENGINEERING

51 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 38. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part IV	103
Practical Mathematics Part II... 138		Masonry and Reinforced Concrete Part V	103
Practical Mathematics Part III... 138		Statics	103
Practical Physics Part I..... 138		Steel Construction Part I... ..	104
Practical Physics Part II..... 138		Steel Construction Part II.....	104
Mechanical Drawing Part I..... 137		Steel Construction Part III.....	104
Mechanical Drawing Part II..... 137		Steel Construction Part IV.....	104
Mechanical Drawing Part III..... 137		Roof Trusses	104
Architectural Lettering	99	Structural Drafting Part I.....	104
Perspective Drawing	99	Structural Drafting Part II.....	104
Carpentry Part I.....	100	Practical Problems in Construction	105
Carpentry Part II.....	100	Cost Analysis Engineering.....	109
Carpentry Part III.....	100	Electric Wiring	112
Carpentry Part IV.....	100	Electric Lighting	112
Steel Square	101	Underwriters' Requirements Part I	128
Stair-Building	101	Underwriters' Requirements Part II	128
Algebra Part I.....	139	Building Code	127
Algebra Part II.....	139	Estimating Part I.....	101
Plane Geometry	139	Estimating Part II.....	101
Logarithmic Tables	139	Contracts and Specifications Part I	102
Trigonometry Part I.....	140	Contracts and Specifications Part II	102
*Graphs	140	Legal Relations	102
Strength of Materials Part I....	103	Building Superintendence Part I..	102
Strength of Materials Part II....	103	Building Superintendence Part II.	102
Masonry and Reinforced Concrete Part I	103		
Masonry and Reinforced Concrete Part II	103		
Masonry and Reinforced Concrete Part III	103		

*Optional work

Tuition \$110.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

CONTRACTING AND BUILDING

51 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 39. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete	
Practical Mathematics Part II....	138	Part IV	103
Practical Mathematics Part III..	138	*Masonry and Reinforced Concrete	
Practical Physics Part I.....	138	Part V	103
Practical Physics Part II.....	138	Cost Analysis Engineering.....	100
Plane Geometry	139	Sheet-Metal Work Part I.....	126
Mechanical Drawing Part I.....	137	Sheet-Metal Work Part II.....	126
Mechanical Drawing Part II.....	137	Sheet-Metal Work Part III.....	126
Mechanical Drawing Part III....	137	Sheet-Metal Work Part IV.....	126
Architectural Lettering	99	Electric Wiring	112
Architectural Drawing Part I....	99	Electric Lighting	112
Architectural Drawing Part II...	99	Underwriters' Requirements Part I	128
Carpentry Part I.....	100	Underwriters' Requirements	
Carpentry Part II.....	100	Part II	128
Carpentry Part III.....	100	Heating and Ventilation Part I...	125
Carpentry Part IV.....	100	Heating and Ventilation Part II..	125
Steel Square	101	Heating and Ventilation Part III.	125
Stair-Building	101	Plumbing Part I.....	126
Plastering	101	Plumbing Part II.....	126
Painting	101	Plumbing Part III.....	126
Hardware	101	Building Code	127
Strength of Materials Part I....	103	Estimating Part I.....	101
Strength of Materials Part II....	103	Estimating Part II.....	101
Masonry and Reinforced Concrete		Contracts and Specifications Part I	102
Part I	103	Contracts and Specifications	
Masonry and Reinforced Concrete		Part II	102
Part II	103	Legal Relations	102
*Masonry and Reinforced Concrete		Building Superintendence Part I..	102
Part III	103	Building Superintendence Part II.	102

*Optional work

Tuition \$110.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

REINFORCED CONCRETE

26 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 39. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part I	103
Practical Mathematics Part II....	138	Masonry and Reinforced Concrete Part II	103
Practical Mathematics Part III..	138	Masonry and Reinforced Concrete Part III	103
Practical Physics Part I.....	138	Masonry and Reinforced Concrete Part IV	103
Practical Physics Part II.....	138	Masonry and Reinforced Concrete Part V	103
Mechanical Drawing Part I.....	137	Cost Analysis Engineering.....	109
Mechanical Drawing Part II.....	137	Estimating Part I.....	101
Mechanical Drawing Part III....	137	Estimating Part II.....	101
Algebra Part I.....	139	Contracts and Specifications Part I	102
Algebra Part II.....	139	Contracts and Specifications Part II	102
Plane Geometry	139	Legal Relations	102
Logarithmic Tables	139		
Trigonometry Part I.....	140		
Strength of Materials Part I.....	103		
Strength of Materials Part II....	103		

Tuition \$55.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

CARPENTRY

22 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 40. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Steel Square	101
Practical Mathematics Part II....	138	Stair-Building	101
Practical Mathematics Part III..	138	*Architectural Lettering.....	99
Plane Geometry	139	*Architectural Drawing Part I...	99
Mechanical Drawing Part I.....	137	Architectural Drawing Part II...	99
Mechanical Drawing Part II.....	137	Perspective Drawing	99
Mechanical Drawing Part III....	137	Plastering	101
Carpentry Part I.....	100	Painting	101
Carpentry Part II.....	100	Hardware	101
Carpentry Part III.....	100	Building Superintendence Part I..	102
Carpentry Part IV.....	100	Building Superintendence Part II.	102

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF CIVIL ENGINEERING

(Opened to students in 1903)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

CIVIL ENGINEERING

Outline on page 50

A complete course, including all the work of the four great branches of municipal, structural, railroad and reclamation engineering. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and structural drawing, and freehand work; the use of surveying instruments, keeping field notes, surveying methods, and the making of maps; improvement of rivers and harbors, and the construction of dikes and breakwaters; water supply and sewerage systems for all localities; modern methods of municipal sanitation and sewage disposal; the theory and practice of successful types of irrigation works; the development of water power, the design of turbine and impulse wheels, and the design, construction and operation of hydraulic power plants; domestic water supply and house drainage systems; the possibilities and limitations of masonry, reinforced concrete and steel construction as applied to modern engineering operations; the location, construction and maintenance of country roads; paving of city streets; design and construction of steel bridges; locating, building and maintaining railroad lines; the details of profitable estimating on civil engineering contracts, determining costs, drawing up contracts, and writing specifications.

This complete course is recommended for every man interested or engaged in civil engineering, who does not already possess a thorough and systematic knowledge of the subject. Civil engineering work is becoming more specialized every day, and most men prefer to confine their efforts to one of the big special lines; but the specialist will do his own work much better if he understands the work of the other specialists with whom he must co-operate. It is comparatively easy for a young man to join a field surveying gang and work up to a position as instrument man; but to have his own gang, to handle the great engineering problems of city and

state and nation—to be, in short, a competent civil engineer—a man must have a thorough training in mathematics, strength of materials, mechanics, hydraulics, sanitation, and reinforced concrete. Such knowledge can be obtained by careful systematic study much more quickly and surely than by the undirected experience gained in the field or office. Experience is of value only when the man knows the cause as well as the effect. This course will give the inexperienced man a thorough training in all branches of civil engineering, so that he can make a wise choice when he comes to specialize; it will enable the man already at work to systematize his knowledge, and master the branches in which he has had no experience. It will prepare the student to direct the design and construction of engineering work with the highest degree of efficiency.

RAILROAD ENGINEERING

Outline on page 51

A course in the special branches of civil engineering that should be understood by the man engaged in railway construction or maintenance. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and structural drawing, and freehand work; the use of surveying instruments, keeping field notes, and the making of maps; the possibilities and limitations of masonry, reinforced concrete and steel construction as applied to modern engineering operations; improvement of river and harbors, and the construction of dikes and breakwaters; locating, building and maintaining railroad lines; design and construction of steel work for buildings or bridges; the details of profitable estimating on civil engineering contracts, determining costs, drawing up contracts, and writing specifications. Recommended for railroad officials, contractors, division engineers, track foremen, road masters, and others who wish a thorough knowledge of railroad construction work. Prepares for position as railroad engineer, or engineer of maintenance of way.

MUNICIPAL ENGINEERING

Outline on page 52

A course in the special branches of civil engineering that must be understood by the engineer acting for a municipality, State, or

the National Government. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing, and freehand work; the use of surveying instruments, keeping field notes, surveying methods, and the making of maps; improvement of rivers and harbors, and the construction of dikes and breakwaters; water supply and sewerage systems for all localities; modern methods of municipal sanitation and sewage disposal; domestic water supply and house drainage systems; the possibilities and limitations of masonry and reinforced concrete as applied to modern engineering operations; the location, construction, and maintenance of country roads; paving of city streets; the details of profitable estimating on civil engineering contracts, determining costs, drawing up contracts, and writing specifications. Recommended for county surveyors, engineering contractors, instrument men, rodmen, chainmen, and all officials responsible to the municipality for the contracting of such work. Prepares for position as municipal engineer.

STRUCTURAL ENGINEERING

Outline on page 53

A course in the special branches of civil engineering required for the handling of work that involves reinforced concrete and steel construction. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and structural drawing, and freehand work; the use of surveying instruments, and keeping field notes; the possibilities and limitations of masonry, reinforced concrete and steel construction as applied to modern engineering operations; design and construction of steel work for buildings or bridges; the details of profitable estimating on civil engineering contracts, determining costs, drawing up contracts, and writing specifications. Recommended for contractors, structural steel and bridge workers, structural draftsmen, and others who wish a thorough knowledge of structural work. Prepares for position as designing or supervising structural engineer.

RECLAMATION ENGINEERING

Outline on page 54

A course in the special branches of civil engineering required for the handling of private, state and government reclamation

and irrigation projects. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing, and freehand work; the use of surveying instruments, keeping field notes, and the making of maps; the possibilities and limitations of masonry and reinforced concrete as applied to modern engineering operations; improvement of rivers and harbors, and the construction of dikes and breakwaters; water supply and sewerage systems for all localities; modern methods of municipal sanitation and sewage disposal; the theory and practice of successful types of irrigation works; the development of water power, the design of turbine and impulse wheels, and the design, construction and operation of hydraulic power plants; domestic water supply and house drainage systems; the details of estimating on civil engineering contracts, and determining costs. Recommended for surveyors, contractors, city and county engineers, county commissioners, and others who wish a thorough knowledge of reclamation work. Prepares for position as irrigation or reclamation engineer.

BRIDGE ENGINEERING

Outline on page 55

A special course in the construction of concrete and steel bridges used on railroads and highways. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and structural drawing, and freehand work; the possibilities and limitations of masonry and reinforced concrete construction as applied to modern engineering operations; construction of steel bridges, with particular attention to the design of different types of trusses. Recommended for concrete, structural steel and bridge workers. Prepares for position as bridge engineer, or inspector of bridge construction.

SURVEYING

Outline on page 54

A short course in the fundamentals of civil engineering. Young men intending to make the profession their life work will get into practical surveying work just as quickly, and prepare themselves for much larger opportunities, by taking the complete course.

Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing and freehand work; the use of surveying instruments, keeping field notes, surveying methods, and the making of maps; the location, construction, and maintenance of country roads; paving of city streets; the details of estimating, and determining costs. Recommended for rodmen, chainmen, draftsmen, etc., who want to learn the theory and use of surveying instruments. Prepares for position as city or county surveyor, railroad surveyor, or instrument man.

CIVIL ENGINEERING

64 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 45. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Plumbing Part I.....	126
Practical Mathematics Part II....	138	Plumbing Part II.....	126
Practical Mathematics Part III....	138	Plumbing Part III.....	126
Practical Physics Part I.....	138	Strength of Materials Part I....	103
Practical Physics Part II.....	138	Strength of Materials Part II....	103
Metallurgy	118	Masonry and Reinforced Concrete	
Mechanical Drawing Part I.....	137	Part I	103
Mechanical Drawing Part II.....	137	Masonry and Reinforced Concrete	
Mechanical Drawing Part III....	137	Part II	103
*Freehand Drawing	99	Masonry and Reinforced Concrete	
Perspective Drawing	99	Part III	103
Algebra Part I.....	139	Masonry and Reinforced Concrete	
Algebra Part II.....	139	Part IV	103
Plane Geometry	139	Masonry and Reinforced Concrete	
Logarithmic Tables	139	Part V	103
Trigonometry Part I.....	140	Highway Construction Part I....	108
Trigonometry Part II.....	140	Highway Construction Part II....	108
*Graphs	140	Statics	103
Plane Surveying Part I.....	105	Steel Construction Part I.....	104
Plane Surveying Part II.....	105	Steel Construction Part II.....	104
Plane Surveying Part III.....	105	Steel Construction Part III.....	104
Plotting and Topography.....	105	Steel Construction Part IV.....	104
Hydraulics	106	Roof Trusses	104
Bacteriology and Sanitation....	125	Structural Drafting Part I.....	104
River and Harbor Improvement..	106	Structural Drafting Part II.....	104
Sewers and Drains Part I.....	107	Practical Problems in Construc-	
Sewers and Drains Part II.....	107	tion	105
Water Supply Part I.....	106	Bridge Engineering Part I.....	108
Water Supply Part II.....	106	Bridge Engineering Part II.....	108
Irrigation Engineering	106	Railroad Engineering Part I....	109
Water Power Development Part I.	107	Railroad Engineering Part II....	109
Water Power Development Part II	107	Railroad Engineering Part III....	109
Water Power Development		Trigonometric Tables	109
Part III	107	Cost Analysis Engineering.....	109
Dams and Weirs Part I.....	107	Civil Engineering Specifications	
Dams and Weirs Part II.....	107	and Contracts	109

*Optional work

Tuition \$140.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

RAILROAD ENGINEERING

44 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 46. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part II	103
Practical Mathematics Part II...	138	Masonry and Reinforced Concrete Part III	103
Practical Mathematics Part III..	138	Masonry and Reinforced Concrete Part IV	103
Practical Physics Part I.....	138	Masonry and Reinforced Concrete Part V	103
Practical Physics Part II.....	138	River and Harbor Improvement..	106
Mechanical Drawing Part I.....	137	Railroad Engineering Part I....	109
Mechanical Drawing Part II.....	137	Railroad Engineering Part II....	109
Mechanical Drawing Part III....	137	Railroad Engineering Part III...	109
Perspective Drawing	99	Trigonometric Tables	109
Algebra Part I.....	139	Statics	103
Algebra Part II.....	139	Steel Construction Part I.....	104
Plane Geometry	139	Steel Construction Part II.....	104
Logarithmic Tables	139	Steel Construction Part III.....	104
Trigonometry Part I.....	140	Steel Construction Part IV.....	104
Trigonometry Part II.....	140	Practical Problems in Construc- tion	105
*Graphs	140	Bridge Engineering Part I.....	108
Plane Surveying Part I.....	105	Bridge Engineering Part II.....	108
Plane Surveying Part II.....	105	Structural Drafting Part I.....	104
Plane Surveying Part III.....	105	Structural Drafting Part II.....	104
Plotting and Topography.....	105	Cost Analysis Engineering.....	109
Strength of Materials Part I....	103	Civil Engineering Specifications and Contracts	109
Strength of Materials Part II....	103		
Masonry and Reinforced Concrete Part I	103		

*Optional work

Tuition \$100.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MUNICIPAL ENGINEERING

42 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 46. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Sewers and Drains Part II.....	107
Practical Mathematics Part II...	138	Water Supply Part I.....	106
Practical Mathematics Part III..	138	Water Supply Part II.....	106
Practical Physics Part I.....	138	Dams and Weirs Part I.....	107
Practical Physics Part II.....	138	Dams and Weirs Part II.....	107
Mechanical Drawing Part I.....	137	Plumbing Part I.....	126
Mechanical Drawing Part II.....	137	Plumbing Part II.....	126
Mechanical Drawing Part III....	137	Plumbing Part III.....	126
Perspective Drawing	99	Strength of Materials Part I....	103
Algebra Part I.....	139	Strength of Materials Part II....	103
Algebra Part II.....	139	Masonry and Reinforced Concrete Part I	103
Plane Geometry	139	Masonry and Reinforced Concrete Part II	103
Logarithmic Tables	139	Masonry and Reinforced Concrete Part III	103
Trigonometry Part I.....	140	Masonry and Reinforced Concrete Part IV	103
*Graphs	140	Masonry and Reinforced Concrete Part V	103
Plane Surveying Part I.....	105	Highway Construction Part I....	108
Plane Surveying Part II.....	105	Highway Construction Part II... 108	
Plane Surveying Part III.....	105	Cost Analysis Engineering.....	109
Plotting and Topography.....	105	Civil Engineering Specifications and Contracts	109
River and Harbor Improvement..	106		
Hydraulics	106		
Bacteriology and Sanitation.....	125		
Sewers and Drains Part I.....	107		

*Optional work

Tuition \$100.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

STRUCTURAL ENGINEERING

39 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 47. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part II	103
Practical Mathematics Part II... 138		Masonry and Reinforced Concrete Part III	103
Practical Mathematics Part III.. 138		Masonry* and Reinforced Concrete Part IV	103
Practical Physics Part I..... 138		Masonry and Reinforced Concrete Part V	103
Practical Physics Part II..... 138		Statics	103
Mechanical Drawing Part I..... 137		Steel Construction Part I.....	104
Mechanical Drawing Part II..... 137		Steel Construction Part II.....	104
Mechanical Drawing Part III.... 137		Steel Construction Part III.....	104
Freehand Drawing	99	Steel Construction Part IV.....	104
Perspective Drawing	99	Roof Trusses	104
Algebra Part I.....	139	Structural Drafting Part I.....	104
Algebra Part II.....	139	Structural Drafting Part II.....	104
Plane Geometry	139	Practical Problems in Construction	105
Logarithmic Tables	139	Bridge Engineering Part I.....	108
Trigonometry Part I.....	140	Bridge Engineering Part II.....	108
*Graphs	140	Cost Analysis Engineering.....	109
Plane Surveying Part I.....	105	Building Code	127
Plane Surveying Part II.....	105	Civil Engineering Specifications and Contracts	109
Strength of Materials Part I.....	103		
Strength of Materials Part II....	103		
Masonry and Reinforced Concrete Part I	103		

*Optional work

Tuition \$100.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

RECLAMATION ENGINEERING

33 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 47. For synopses of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete Part III	103
Practical Mathematics Part II....	138	Masonry and Reinforced Concrete Part IV	103
Practical Mathematics Part III....	138	Masonry and Reinforced Concrete Part V	103
Practical Physics Part I.....	138	River and Harbor Improvement..	106
Practical Physics Part II.....	138	Hydraulics	106
Algebra Part I.....	139	Sewers and Drains Part I.....	107
Algebra Part II.....	139	Irrigation Engineering	106
Plane Geometry	139	Water Supply Part I.....	106
Logarithmic Tables	139	Water Supply Part II.....	106
Trigonometry Part I.....	140	Water Power Development Part I.	107
Plane Surveying Part I.....	105	Water Power Development Part II	107
Plane Surveying Part II.....	105	Water Power Development	
Plane Surveying Part III.....	105	Part III	107
Plotting and Topography.....	105	Dams and Weirs Part I.....	107
Strength of Materials Part I....	103	Dams and Weirs Part II.....	107
Strength of Materials Part II....	103	Cost Analysis Engineering.....	109
Masonry and Reinforced Concrete Part I	103		
Masonry and Reinforced Concrete Part II	103		

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SURVEYING

19 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 48. For synopses of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Logarithmic Tables	139
Practical Mathematics Part II....	138	Trigonometry Part I.....	140
Practical Mathematics Part III....	138	Plane Surveying Part I.....	105
Mechanical Drawing Part I.....	137	Plane Surveying Part II.....	105
Mechanical Drawing Part II.....	137	Plane Surveying Part III.....	105
Mechanical Drawing Part III.....	137	Plotting and Topography.....	105
Perspective Drawing	99	Highway Construction Part I....	108
Algebra Part I.....	139	Highway Construction Part II....	108
Algebra Part II.....	139	Cost Analysis Engineering.....	109
Plane Geometry	139		

Tuition \$45.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

BRIDGE ENGINEERING

27 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 48. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Masonry and Reinforced Concrete	
Practical Mathematics Part II...	138	Part I	103
Practical Mathematics Part III..	138	Masonry and Reinforced Concrete	
Practical Physics Part I.....	138	Part II	103
Practical Physics Part II.....	138	Masonry and Reinforced Concrete	
Mechanical Drawing Part I.....	137	Part III	103
Mechanical Drawing Part II.....	137	Masonry and Reinforced Concrete	
Mechanical Drawing Part III....	137	Part IV	103
Algebra Part I.....	139	Masonry and Reinforced Concrete	
Algebra Part II.....	139	Part V	103
Plane Geometry	139	Statics	103
Logarithmic Tables	139	Roof Trusses	104
Trigonometry Part I.....	140	Structural Drafting Part I.....	104
*Graphs	140	Structural Drafting Part II.....	104
Strength of Materials Part I....	103	Bridge Engineering Part I.....	108
Strength of Materials Part II....	103	Bridge Engineering Part II.....	108

*Optional work

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.



Entrance Hall, Administration Building, American School of Correspondence

DEPARTMENT OF ELECTRICAL ENGINEERING

(Opened to students in 1897)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

ELECTRICAL ENGINEERING

Outline on page 61

A complete course in the generation of electricity by steam or gas power, and its application for power, light, and transportation. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing, and machine design; the fundamental principles of electricity, its properties and measurements; the design, construction and operation of standard types of direct current dynamos and motors, with particular attention to the prevention and correction of "trouble"; methods of wiring and lighting that satisfy the underwriters' requirements, and electric welding; the construction, operation and maintenance of electric railways of the several practical types, with a careful study of power plants and transmission; the principles, construction, operation and testing of alternating current machinery; the conversion of alternating current into direct current, and the principles and practical applications of transformers; the location and operation of central power plants, including sub-stations and storage-batteries; the transformation of power; chemistry of combustion and theory of heat in relation to boilers; the principles and operation of the stationary steam engine, and of the modern steam turbines, horizontal and vertical type; the principles, operation and application of gas and oil engines. Telephone practice is given in a separate course.

This course is recommended for every man engaged or interested in general electrical work who does not already possess a systematic knowledge of the branches that it covers. Electricity is now applied to so many widely different uses that the electrical worker must specialize to a considerable extent; but before he chooses his particular line, he should have the general training upon which specialization must be based. And electrical progress is so rapid that the man who keeps up with it must have a general funda-

mental knowledge of what has been done, in order to give the requisite amount of time and thought to new discoveries and inventions. Within the last ten years the demand for electrical workers has attracted thousands of men who were not making good in other lines; and their failure to better themselves has led to the belief that the electrical field is overcrowded. It is overcrowded with men whose electrical knowledge will hardly enable them to run a wire according to underwriters' requirements; but it offers splendid opportunities for men who are qualified to hold responsible positions, or do high grade, intelligent work. This course will give the inexperienced man a thorough training in general electrical work; or enable the man of experience to systematize his knowledge, and master the branches in which he has had no experience. It will prepare the student for a position as electrical engineer, designer or draftsman in connection with a power or light plant, a manufacturing concern, general consulting work, or as chief engineer in charge of a power plant.

HYDRO-ELECTRIC ENGINEERING

Outline on page 62

A complete course in the generation of electricity by water power, and its application for power, light, and transportation. Covers the same general work in principles, direct and alternating current, railways, central station work and power transmission as Electrical Engineering. Substitutes for steam and gas power plants: a complete treatise on masonry, reinforced concrete and hydraulics; the development of water power, the design of turbine and impulse wheels, and the description of the construction and operation of hydraulic power plants. Recommended for every man engaged or interested in hydro-electric work. Prepares for same positions as Electrical Engineering in this special branch.

ELECTRIC LIGHT AND POWER

Outline on page 64

A special course in the generation of electricity by steam or gas power, and its application for power, light and transportation. Not a short cut to electrical engineering. Intended for the man who wishes to understand the operation of power plants using

only direct current. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing; the fundamental principles of electricity; the construction and operation of standard types of direct current dynamos and motors, with particular attention to the prevention and correction of "trouble"; methods of wiring and lighting that satisfy the underwriters' requirements; the construction, operation and maintenance of electric railways of the several practical types, with a careful study of power plants and transmission; the location and operation of central power plants, including sub-stations and storage batteries; the principles and operation of the stationary steam engine, and of the modern steam turbine, horizontal and vertical type; the principles, operation and application of gas and oil engines. Recommended for electricians, dynamo tenders, linemen, trouble men, and others who wish to get a thorough and systematic knowledge of the generation and use of direct current. Prepares for position as draftsman and designer for central station, or engineer in charge of isolated plants.

TELEPHONE PRACTICE

Outline on page 63

A complete course in the construction and maintenance of standard telephone systems. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing; the fundamental principles of electricity, its properties and measurement; the underlying principles of telephony, and the mechanical and electrical devices used to reproduce and transmit speech; substation equipment; the principles and advantages of the various party-line systems; protection of lines, instruments and substations against damage by lightning, high potentials and sneak currents; manual switchboards of the several types, and other apparatus necessary for the operation of an exchange; automatic exchange systems, including an unbiased comparison with manual systems; location and equipment of power plants; the special service features involved in private exchanges, long distance work, and the various methods of measuring service; use of telephone and telegraph in train dispatching on steam and electric railways; construction of lines, including careful study of aerial and under-

ground systems; practical methods of developing traffic and giving efficient service; the apparatus, code and practice of the electric telegraph, as used in commercial and railway work; the fundamentals of wireless telegraphy and telephony, with description of the most practical systems.

This course is recommended for every man engaged or interested in telephone work, who does not already possess a thorough and systematic knowledge of the subjects that it covers. Telephony, while a branch of electrical engineering, is a distinct profession, and should be so studied. It involves many problems in mechanics, acoustics, and electrical development peculiar to itself. The continual improvements in apparatus and practice, the application of the telephone to new uses, and the inevitable perfection of wireless systems, require the most thorough training of the man who would keep up with the advance of the profession. Recommended for linemen, "trouble shooters," wire chiefs, managers, railway dispatchers, electricians, and others who want a thorough knowledge of telephone practice. Prepares for position as draftsman or designer, or operating or consulting telephone engineer.

ALTERNATING CURRENT WORK

Outline on page 64

A special advanced course in alternating current, the principles, theories, construction and operation of A. C. machinery. Open only to technical school graduates, men of practical experience, and those who satisfy the School of their ability to handle advanced work. Covers a clear treatment of the necessary mathematics; theory and practice of instruments for electrical measurements; principles, types and uses of the steam turbine; the principles, construction, operation and testing of alternating current machinery; the conversion of alternating current into direct current, and the principles and practical applications of transformers; the location and operation of central power plants, and the transmission of power. Recommended for men already familiar with direct current work who wish to complete their electrical training. Prepares such men for positions as designers, or consulting or operating electrical engineers.

ELECTRICAL ENGINEERING

63 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 57. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Alternating Current Machinery Part I (Fundamental Principles)	113
Practical Mathematics Part II....	138	Alternating Current Machinery Part II (Alternators)	113
Practical Mathematics Part III....	138	Alternating Current Machinery Part III (Testing—Synchronous Motors)	113
Practical Physics Part I.....	138	Alternating Current Machinery Part IV (Transformers)	113
Practical Physics Part II.....	138	Alternating Current Machinery Part V (Converters)	113
Mechanical Drawing Part I.....	137	Alternating Current Machinery Part VI (Induction Motors—Switchboards)	113
Mechanical Drawing Part II.....	137	Electrical Measurements Part II.....	113
Mechanical Drawing Part III.....	137	Power Stations	114
Chemistry of Combustion.....	121	Power Transmission	114
Elements of Electricity.....	110	Direct-Current Dynamos Part II (Calculations)	110
Electric Current	110	Direct-Current Dynamos Part III (Design)	110
Electrical Measurements Part I.....	113	Types of Boilers.....	121
Direct-Current Dynamos Part I (Principles)	110	Heat	121
Direct-Current Motors	111	Boiler Accessories Part I.....	121
Types of Dynamo Electric Machinery	111	Boiler Accessories Part II.....	121
Management of Dynamo Electric Machinery Part I.....	111	Mechanism	118
Management of Dynamo Electric Machinery Part II.....	111	*Mechanical Drawing Part IV....	137
Storage Batteries	111	*Mechanical Drawing Part V....	137
Electric Wiring	112	*Mechanical Drawing Part VI....	137
Electric Lighting	112	Machine Design Part I.....	119
Underwriters' Requirements Part I	128	Machine Design Part II.....	119
Underwriters' Requirements Part II	128	Steam Engines Part I.....	122
Electric Welding	117	Steam Engines Part II.....	122
Electric Railways Part I.....	112	Pumps	121
Electric Railways Part II.....	112	Steam Turbines Part I.....	122
Electric Railways Part III.....	112	Steam Turbines Part II.....	122
Electric Railways Part IV.....	112	Gas and Oil Engines Part I.....	123
Algebra Part I.....	139	Gas and Oil Engines Part II.....	123
Algebra Part II.....	139	Self-Propelled Railway Cars.....	125
Plane Geometry	139		
Logarithmic Tables	139		
Trigonometry Part I.....	140		
Trigonometry Part II.....	140		
*Graphs	140		

*Optional work

Tuition \$120.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

HYDRO-ELECTRIC ENGINEERING

57 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 58. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Alternating Current Machinery Part I (Fundamental Principles)	113
Practical Mathematics Part II....	138	Alternating Current Machinery Part II (Alternators)	113
Practical Mathematics Part III....	138	Alternating Current Machinery Part III (Testing—Synchronous Motors)	113
Practical Physics Part I.....	138	Alternating Current Machinery Part IV (Transformers).....	113
Practical Physics Part II.....	138	Alternating Current Machinery Part V (Converters)	113
Mechanical Drawing Part I.....	137	Alternating Current Machinery Part VI (Induction Motors—Switchboards)	113
Mechanical Drawing Part II.....	137	Electrical Measurements Part II..	113
Mechanical Drawing Part III.....	137	Power Stations	114
Chemistry of Combustion.....	121	Power Transmission	114
Elements of Electricity.....	110	Direct-Current Dynamos Part II (Calculations)	110
Electric Current	110	Direct-Current Dynamos Part III (Design)	110
Electrical Measurements Part I..	113	Strength of Materials Part I....	103
Direct-Current Dynamos Part I (Principles)	110	Strength of Materials Part II..	103
Direct-Current Motors	111	Masonry and Reinforced Concrete Part I	103
Types of Dynamo-Electric Machinery	111	Masonry and Reinforced Concrete Part II	103
Management of Dynamo Electric Machinery Part I.....	111	Masonry and Reinforced Concrete Part III	103
Management of Dynamo Electric Machinery Part II.....	111	Masonry and Reinforced Concrete Part IV	103
Storage Batteries	111	Masonry and Reinforced Concrete Part V	103
Electric Wiring	112	Hydraulics	106
Electric Lighting	112	Water Supply Part I.....	106
Underwriters' Requirements Part I	128	Water Supply Part II.....	106
Underwriters' Requirements Part II	128	Water-Power Development Part I.	107
Electric Welding	117	Water-Power Development Part II	107
Electric Railways Part I.....	112	Water-Power Development Part III	107
Electric Railways Part II.....	112		
Electric Railways Part III.....	112		
Electric Railways Part IV.....	112		
Algebra Part I.....	139		
Algebra Part II.....	139		
Plane Geometry	139		
Logarithmic Tables	139		
Trigonometry Part I.....	140		
Trigonometry Part II.....	140		

Tuition \$115.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

TELEPHONE PRACTICE

29 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 59. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Telephony Part VII (Manual Switchboards)	115
Practical Mathematics Part II... 138		Telephony Part VIII (Manual Switchboards)	115
Practical Mathematics Part III.. 138		Telephony Part IX (Automatic Systems)	115
Practical Physics Part I..... 138		Telephony Part X (Power Plants and Buildings)	116
Practical Physics Part II..... 138		Telephony Part XI (Special Service Features)	116
Mechanical Drawing Part I..... 137		Telephony Part XII (Telegraph and Railway Work)	116
Mechanical Drawing Part II..... 137		Telephony Part XIII (Line Construction)	116
Mechanical Drawing Part III.... 137		Telephony Part XIV (Line Construction)	116
Elements of Electricity..... 110		Telephony Part XV (Engineering and Maintenance)	116
Electric Current	110	*Electric Telegraph Part I.....	117
Telephony Part I (Fundamental Principles)	114	*Electric Telegraph Part II....	117
Telephony Part II (Substation Equipment)	114	*Wireless Telegraphy	117
Telephony Part III (Substation Equipment)	114	*Wireless Telephony	117
Telephony Part IV (Party-Line Systems)	115		
Telephony Part V (Protection).. 115			
Telephony Part VI (Manual Switchboards)	115		

*Optional work

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ELECTRIC LIGHT AND POWER

40 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 58. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Underwriters' Requirements Part I	128
Practical Mathematics Part II....	138	Underwriters' Requirements	
Practical Mathematics Part III....	138	Part II	128
Practical Physics Part I.....	138	Electric Welding	117
Practical Physics Part II.....	138	*Electric Railways Part I.....	112
Mechanical Drawing Part I.....	137	*Electric Railways Part II.....	112
Mechanical Drawing Part II.....	137	*Electric Railways Part III.....	112
Mechanical Drawing Part III.....	137	*Electric Railways Part IV.....	112
Chemistry of Combustion.....	121	*Self-Propelled Railway Cars.....	125
Elements of Electricity.....	110	Types of Boilers.....	121
Electric Current	110	Heat	121
Direct-Current Dynamos Part* I		Boiler Accessories Part I.....	121
(Principles)	110	Boiler Accessories Part II.....	121
Direct-Current Motors	111	Steam Engines Part I.....	122
Types of Dynamo Electric Ma-		Steam Engines Part II.....	122
chinery	111	Pumps	121
Management of Dynamo Electric		Steam Turbines Part I.....	122
Machinery Part I.....	111	Steam Turbines Part II.....	122
Management of Dynamo Electric		Power Stations	114
Machinery Part II.....	111	Gas-Producers	123
Storage Batteries	111	Gas and Oil Engines Part I.....	123
Electric Wiring	112	Gas and Oil Engines Part II....	123
Electric Lighting	112		

*Optional work

Tuition \$80.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ALTERNATING CURRENT WORK

19 Instruction Books

SUBJECTS IN THE COURSE

NOTE: This course is open only to technical school graduates and men of practical experience; see page 60. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Algebra Part I.....	139	Alternating Current Machinery	
Algebra Part II.....	139	Part III (Testing—Synchronous	
Plane Geometry	139	Motors)	113
Logarithmic Tables	139	Alternating Current Machinery	
Trigonometry Part I.....	140	Part IV (Transformers).....	113
Trigonometry Part II.....	140	Alternating Current Machinery	
*Graphs	140	Part V (Converters).....	113
Electrical Measurements Part I..	113	Alternating Current Machinery	
Steam Turbines Part I.....	122	Part VI (Induction Motors—	
Steam Turbines Part II.....	122	Switchboards)	113
Alternating Current Machinery		Electrical Measurements Part II..	113
Part I (Fundamental Princi-		Power Stations	114
ples)	113	Power Transmission	114
Alternating Current Machinery			
Part II (Alternators)	113		

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF MECHANICAL ENGINEERING

(Opened to students in 1897)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

MECHANICAL ENGINEERING

Outline on page 68

A complete course in the use of metals, tools and machines, and the operation of machine shops driven by steam or gas power. Covers a clear treatment of the necessary mathematics and physics; the physical and chemical properties of metals; practice in mechanical and machine drawing, including machine design; pattern making, casting of iron, steel, brass and other alloys for all purposes; light and heavy forging; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; the use of all types of hand and machine tools and machines found in the up-to-date shop, with a practical study of modern manufacturing conditions, and successful methods of shop management; making, tempering, and proving hand and machine tools for all grades of regular or special work; designing and building power-driven machines for all purposes; the principles and operation of the stationary steam engine, and of the modern steam turbine, horizontal and vertical type; compressed air machines and the production of compressed air, with its application to various purposes; the principles, operation and application of gas and oil engines; construction and operation of locomotive boilers and engines, and the theory and use of the air-brake; refrigerating systems, ice-making, and the practical commercial application of refrigeration.

This course is recommended for every man engaged or interested in general mechanical work, who does not already possess a systematic knowledge of the branches that it covers. It is a simple matter for the young man with a mechanical bent to get a job as helper in a machine shop, and work up to be an expert machine hand; but if he relies upon experience alone, he will seldom get any higher. Machine shop work is of necessity highly specialized; parts which are duplicated by the thousands are turned out by the

piece work system ; and the man who can run one machine "with his eyes shut" will waste time and spoil valuable material experimenting to "get the hang" of a strange machine. Mechanical engineering offers too broad a field for the ambitious man to be content as a machine hand. Every progressive industry in the world today depends upon the mechanic for its tools, implements, and machines ; and the man who knows most about mechanical principles and practice has first chance at the big opportunities for advancement created by the growing demand for highly trained mechanics. Some of the best mechanical positions are found outside the shop, in connection with the manufacturing departments of concerns that employ a few skilled engineers to superintend the work of hundreds of machine hands. This course will give the inexperienced man a thorough training in general mechanical work ; or enable the man of experience to systematize his knowledge, and master the branches in which he has had no experience. It will prepare the student to get the training required for a position as consulting or operating mechanical engineer, or as superintendent of any manufacturing plant using steam or gas power.

MECHANICAL-ELECTRICAL ENGINEERING

Outline on page 69

A complete course in the use of metals, tools, and machines, and the operation of shops driven by steam, gas or electric power. Covers the same ground as Mechanical Engineering, except that it omits the work on compressed air, locomotive engines and air-brakes, tool making, and refrigeration ; and adds the fundamental principles of electricity, its properties and measurement ; the design, construction and operation of standard types of direct current dynamos and motors, with particular attention to the prevention and correction of "trouble" ; methods of wiring and lighting that satisfy the underwriters' requirements ; principles and methods of electric welding for commercial purposes. Electricity is steadily replacing steam in the operation of shops and factories ; and electricity as a motive power introduces new problems and new possibilities into mechanical work. The prospective student is urged to consider carefully the advantage of adding a fundamental training in electricity to the complete mechanical work as here offered. Recom-

mended for all men engaged in mechanical or electrical work. Prepares for position as mechanical-electrical engineer.

SHOP PRACTICE

Outline on page 70

A short course in the use of tools, machines and general foundry and machine shop practice. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and machine drawing, including machine design; pattern making, casting of iron, steel, brass and other alloys for all purposes; light and heavy forging; the use of all types of hand and machine tools and machines found in the up-to-date shop, with a practical study of modern manufacturing conditions, and successful methods of shop management; making, tempering, and proving hand and machine tools for all grades of regular and special work. Recommended for machinists, toolmakers, pattern makers, blacksmiths and foundry men. Prepares for position as shop foreman.

MECHANICAL ENGINEERING

58 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 65. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Mechanical Drawing Part V.....	137
Practical Mathematics Part II... 138		Mechanical Drawing Part VI....	137
Practical Mathematics Part III.. 138		Algebra Part I.....	139
Practical Physics Part I.....	138	Algebra Part II.....	139
Practical Physics Part II.....	138	Plane Geometry	139
Chemistry of Combustion.....	121	Logarithmic Tables	139
Metallurgy	118	Trigonometry Part I.....	140
Mechanical Drawing Part I.....	137	Machine Design Part I.....	119
Mechanical Drawing Part II.....	137	Machine Design Part II.....	119
Mechanical Drawing Part III....	137	Steam Engines Part I.....	122
Pattern Making Part I.....	118	Steam Engines Part II.....	122
Pattern Making Part II.....	118	Pumps	121
Foundry Work Part I.....	118	Steam Turbines Part I.....	122
Foundry Work Part II.....	118	Steam Turbines Part II.....	122
Forging	118	Steam Engine Indicators.....	122
Machine-Shop Work Part I.....	119	Valve Gears	123
Machine-Shop Work Part II.....	119	Compressed Air Part I.....	119
Machine-Shop Work Part III....	119	Compressed Air Part II.....	119
Machine-Shop Work Part IV....	119	Gas-Producers	123
Machine-Shop Work Part V.....	119	Gas and Oil Engines Part I.....	123
Tool Making Part I.....	120	Gas and Oil Engines Part II....	123
Tool Making Part II.....	120	Locomotive BOLLERS and Engines	
Tool Making Part III.....	120	Part I	124
Construction of BOLLERS.....	120	Locomotive BOLLERS and Engines	
Types of BOLLERS.....	121	Part II	124
Heat	121	Air-Brake	125
BOLLER Accessories Part I.....	121	Elevators	124
BOLLER Accessories Part II.....	121	Refrigeration Part I.....	123
Mechanism	118	Refrigeration Part II.....	123
Mechanical Drawing Part IV....	137	Refrigeration Part III.....	123

Tuition \$115.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MECHANICAL-ELECTRICAL ENGINEERING

59 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 66. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Types of Boilers.....	121
Practical Mathematics Part II....	138	Heat	121
Practical Mathematics Part III..	138	Boiler Accessories Part I.....	121
Practical Physics Part I.....	138	Boiler Accessories Part II.....	121
Practical Physics Part II.....	138	Mechanism	118
Mechanical Drawing Part I.....	137	Mechanical Drawing Part IV....	137
Mechanical Drawing Part II.....	137	Mechanical Drawing Part V.....	137
Mechanical Drawing Part III....	137	Mechanical Drawing Part VI....	137
Chemistry of Combustion.....	121	Machine Design Part I.....	119
Elements of Electricity.....	110	Machine Design Part II.....	119
Electric Current.....	110	Steam Engines Part I.....	122
Electrical Measurements Part I...	113	Steam Engines Part II.....	122
Direct-Current Dynamos Part I		Pumps	121
(Principles)	110	Steam Turbines Part I.....	122
Direct-Current Motors	111	Steam Turbines Part II.....	122
Types of Dynamo Electric Ma-		Steam Engine Indicators.....	122
chinery	111	Valve Gears	123
Algebra Part I.....	139	Gas-Producers	123
Algebra Part II.....	139	Gas and Oil Engines Part I.....	123
Plane Geometry	139	Gas and Oil Engines Part II....	123
Logarithmic Tables	139	Pattern Making Part I.....	118
Trigonometry Part I.....	140	Pattern Making Part II.....	118
Management of Dynamo Electric		Foundry Work Part I.....	118
Machinery Part I.....	111	Foundry Work Part II.....	118
Management of Dynamo Electric		Forging	118
Machinery Part II.....	111	Electric Welding	117
Storage Batteries	111	Machine-Shop Work Part I.....	119
Electric Wiring	112	Machine-Shop Work Part II.....	119
Electric Lighting	112	Machine-Shop Work Part III....	119
Underwriters' Requirements Part I	128	Machine-Shop Work Part IV....	119
Underwriters' Requirements		Machine-Shop Work Part V.....	119
Part II	128		
Construction of Boilers.....	120		

Tuition \$115.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SHOP PRACTICE

25 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 67. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Machine-Shop Work Part I.....	119
Practical Mathematics Part II....	138	Machine-Shop Work Part II.....	119
Practical Mathematics Part III....	138	Machine-Shop Work Part III.....	119
Practical Physics Part I.....	138	Machine-Shop Work Part IV....	119
Practical Physics Part II.....	138	Machine Shop Work Part V.....	119
Mechanical Drawing Part I.....	137	Tool Making Part I.....	120
Mechanical Drawing Part II.....	137	Tool Making Part II.....	120
Mechanical Drawing Part III....	137	Tool Making Part III.....	120
Pattern Making Part I.....	118	Mechanism	118
Pattern Making Part II.....	118	Mechanical Drawing Part IV....	137
Foundry Work Part I.....	118	*Mechanical Drawing Part V....	137
Foundry Work Part II.....	118	*Mechanical Drawing Part VI... 137	
Forging	118		

*Optional work

Tuition \$55.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF STEAM ENGINEERING

(Opened to students in 1897)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

STATIONARY ENGINEERING

Outline on page 74

A complete course in the principles and operation of the stationary steam engine, and in the various applications of steam power. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical and machine drawing; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; the principles and operation of the stationary steam engine, and of modern steam turbine, horizontal and vertical type; compressed air machines, the production of compressed air, and its application to various purposes; the principles, operation and application of gas and oil engines; refrigerating systems, icemaking plants, and the practical commercial application of refrigeration; modern systems of house heating and ventilating; the fundamental principles of electricity, its properties and use; methods of wiring and lighting that satisfy the underwriters' requirements; the design, construction and operation of standard types of direct current dynamos and motors, with particular attention to the prevention and correction of "trouble"; the operation and control of hydraulic and electric elevators.

This course is recommended for every man interested in stationary engineering. In spite of the growing use of hydraulic and electric power, the steam engine is still an important factor in commerce and the industries, because continual improvement has kept it up to the work demanded of it. The stationary engine, however, is no longer the greatest producer of direct power; in the largest and most modern plants its energy is transformed into electricity, or compressed air, or some other more flexible operative force. Thus the up-to-date engineer is required not only to understand the complex modern engine, but also to have a working knowledge of the special applications of the power that he gener-

ates. Without this knowledge he can never hope to become superintendent of the plant, but must remain a working engineer. This course will give the inexperienced man a thorough training in stationary engineering; or enable the man of experience to systematize his knowledge, and master the branches in which he has had no experience. It will prepare the student to pass with high grade the stationary engineer's license examination in any State.

Every State in the Union requires an operating stationary engineer to have a license, which can be obtained only from the State, by successfully meeting the tests of knowledge and experience that the State may set. This course will give the student the required knowledge; but no school is authorized to issue an engineer's license. A letter of inquiry addressed to the board of Examiners for Steam Engineer's License, at the State Capital, will bring the applicant full information regarding the license requirements of his State.

MARINE ENGINEER'S COURSE

Outline on page 75

A special course in the principles and operation of the marine steam engine. Covers a clear treatment of the necessary mathematics and physics; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; the special features of standard marine boilers; the principles and operation of the marine engine, and of the modern steam turbine, horizontal and vertical type; the fundamental principles of electricity, and its properties; principles, operation and application of gas and oil engines; refrigerative systems and ice-making plants; the principles and practice of navigation. Recommended for marine firemen, stokers, oilers, and others interested in marine engineering. Prepares for position as marine engineer. Every operating marine engineer must have a Federal license. A letter of inquiry to the Board of Examiners for Marine Engineer's License, Federal Building, addressed to the nearest large port, will bring full information regarding license requirements.

LOCOMOTIVE ENGINEER'S COURSE

Outline on page 75

A special course in the principles and operation of the locomotive steam engine. Covers a clear treatment of the necessary

mathematics and physics; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; the principles and operation of the steam engine, construction and operation of locomotive boilers and engines, with locomotive running, railroad signaling, and the theory and use of the air-brake; the fundamental principles of electricity, and its properties. Recommended for locomotive firemen, brakemen, and others interested in railroad work. Prepares for position as locomotive engineer.

STEAM ENGINEER'S COURSE

Outline on page 76

A special short course in the principles and operation of the stationary steam engine. Covers a clear treatment of the necessary mathematics and physics; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; the principles and operation of the stationary steam engine, and of the modern steam turbine, horizontal and vertical type; the fundamental principles of electricity, and its properties; the principles, operation and application of gas and oil engines; the operation and control of hydraulic and electric elevators; refrigerative systems, ice-making plants, and the practical commercial application of refrigeration. Recommended for stationary engineers and firemen seeking a license. Prepares for license examinations of all grades.

STATIONARY ENGINEERING

45 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 71. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Valve Gears	123
Practical Mathematics Part II....	138	Compressed Air Part I.....	119
Practical Mathematics Part III..	138	Compressed Air Part II.....	119
Practical Physics Part I.....	138	Gas-Producers	123
Practical Physics Part II.....	138	Gas and Oil Engines Part I.....	123
Mechanical Drawing Part I.....	137	Gas and Oil Engines Part II.....	123
Mechanical Drawing Part II.....	137	Refrigeration Part I.....	123
Mechanical Drawing Part III.....	137	Refrigeration Part II.....	123
Construction of Boilers.....	120	Refrigeration Part III.....	123
Types of Boilers.....	121	Heating and Ventilation Part I..	125
Heat	121	Heating and Ventilation Part II.	125
Chemistry of Combustion.....	121	Heating and Ventilation Part III.	125
Boiler Accessories Part I.....	121	Elements of Electricity.....	110
Boiler Accessories Part II.....	121	Electric Current	110
Mechanism	118	Storage Batteries	111
Mechanical Drawing Part IV....	137	Electric Wiring	112
*Mechanical Drawing Part V....	137	Electric Lighting	112
*Mechanical Drawing Part VI....	137	Types of Dynamo Electric Ma-	
Steam Engines Part I.....	122	chinery	111
Steam Engines Part II.....	122	Management of Dynamo Electric	
Pumps	121	Machinery Part I.....	111
Steam Turbines Part I.....	122	Management of Dynamo Electric	
Steam Turbines Part II.....	122	Machinery Part II.....	111
Steam Engine Indicators.....	122	Elevators	124

*Optional work

Tuition \$75.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MARINE ENGINEER'S COURSE

27 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 72. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Steam Engines Part II.....	122
Practical Mathematics Part II....	138	Marine Engines	124
Practical Mathematics Part III..	138	Pumps	121
Practical Physics Part I.....	138	Steam Turbines Part I.....	122
Practical Physics Part II.....	138	Steam Turbines Part II.....	122
Construction of Boilers.....	120	Steam Engine Indicators.....	122
Types of Boilers.....	121	Valve Gears.....	123
Heat	121	Electrical Principles	124
Chemistry of Combustion.....	121	Explosion Motors.....	131
Boiler Accessories Part I.....	121	Refrigeration Part I.....	123
Boiler Accessories Part II.....	121	Refrigeration Part II.....	123
Marine Boilers	124	Refrigeration Part III.....	123
Mechanism	118	*Navigation	124
Steam Engines Part I.....	122		

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

LOCOMOTIVE ENGINEER'S COURSE

21 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 72. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Steam Engines Part I.....	122
Practical Mathematics Part II....	138	Steam Engines Part II.....	122
Practical Mathematics Part III..	138	Steam Engine Indicators.....	122
Practical Physics Part I.....	138	Valve Gears	123
Practical Physics Part II.....	138	Locomotive Boilers and Engines	
Construction of Boilers.....	120	Part I	124
Types of Boilers.....	121	Locomotive Boilers and Engines	
Heat	121	Part II	124
Chemistry of Combustion.....	121	Air-Brake	125
Boiler Accessories Part I.....	121	Electrical Principles.....	124
Boiler Accessories Part II.....	121	Self-Propelled Railway Cars....	125
Mechanism	118		

Tuition \$45.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

STEAM ENGINEER'S COURSE

24 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 73. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Steam Engines Part I.....	122
Practical Mathematics Part II....	138	Steam Engines Part II.....	122
Practical Mathematics Part III..	138	Pumps	121
Practical Physics Part I.....	138	Steam Turbines Part I.....	122
Practical Physics Part II.....	138	Steam Turbines Part II.....	122
Construction of Boilers.....	120	Steam Engine Indicators.....	122
Types of Boilers.....	121	Valve Gears	123
Heat	121	Explosion Motors	131
Chemistry of Combustion.....	121	Elevators	124
Boiler Accessories Part I.....	121	Refrigeration Part I.....	123
Boiler Accessories Part II.....	121	Refrigeration Part II.....	123
Mechanism	118	Refrigeration Part III.....	123

Tuition \$45.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF SANITARY ENGINEERING

(Opened to students in 1903)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

HEATING AND VENTILATION ENGINEERING

Outline on page 79

A complete course in the principles and operation of modern heating and ventilation systems, including all the work of the Department. Covers a clear treatment of the necessary mathematics and physics; practice in mechanical drawing; the principles and construction of steam boilers and boiler accessories; chemistry of combustion and theory of heat in relation to boilers; modern systems of house heating and ventilating; the principles and operation of the stationary steam engine; the science of house sanitation, and the planning and installation of house sewerage systems; the fundamental principles of electricity, its properties and use; methods of wiring and lighting that satisfy the underwriters' requirements; the principles and methods of practical tinsmithing; light sheet-metal work, with particular attention to its application to heating and ventilating problems.

This course is recommended for every man interested in building work, or in any branch of house sanitation. The sanitary engineer is a specialist. His field is narrow, but his work is most important, for no building can be considered "safe" unless its heating, plumbing and ventilating systems are carefully planned to provide for the health of its occupants. Just as the architect guards against danger from fire or structural weakness, so the sanitary engineer takes measures preventive of typhoid, pneumonia, and other serious diseases that threaten house dwellers. The rapid advancement in bacteriological science, and in sanitary equipment, requires expert knowledge on the part of those designing, constructing and supervising sanitary installations, and offers big opportunities to the man who keeps up to date. This course is particularly recommended for plumbers, steamfitters and sheet metal workers who desire to get into bigger work. Prepares for position as sanitary inspector and engineer.

HEATING, VENTILATING AND PLUMBING

Outline on page 80

A short course in the principles and installation of modern sanitary systems. Covers a clear explanation of the simple mathematics necessary; practice in mechanical drawing; modern systems of house heating and ventilating; the installation of steam and hot-water systems of standard types; the science of house sanitation, and the planning and installation of house sewerage systems. Recommended for plumbers and steamfitters. Prepares for position as master plumber or steamfitter.

HEATING AND VENTILATION ENGINEERING

37 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 77. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Steam Engines Part I.....	122
Practical Mathematics Part II....	138	Steam Engines Part II.....	122
Practical Mathematics Part III..	138	Pumps	121
Practical Physics Part I.....	138	Bacteriology and Sanitation....	125
Practical Physics Part II.....	138	Plumbing Part I.....	126
Plane Geometry	139	Plumbing Part II.....	126
Mechanical Drawing Part I.....	137	Plumbing Part III.....	126
Mechanical Drawing Part II.....	137	Elements of Electricity.....	110
Mechanical Drawing Part III....	137	Electric Current	110
Construction of BOLLERS.....	120	Electric Wiring	112
Types of BOLLERS.....	121	Electric Lighting	112
Heat	121	Underwriters' Requirements Part I	128
Chemistry of Combustion.....	121	Underwriters' Requirements	
Boiler Accessories Part I.....	121	Part II	128
Boiler Accessories Part II.....	121	Tinsmithing	126
Heating and Ventilation Part I..	125	Sheet-Metal Work Part I.....	126
Heating and Ventilation Part II.	125	Sheet-Metal Work Part II.....	126
Heating and Ventilation Part III	125	*Sheet-Metal Work Part III....	126
Steam and Hot-Water Fitting....	125	*Sheet-Metal Work Part IV....	126

*Optional work

Tuition \$75.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

HEATING, VENTILATING AND PLUMBING

14 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 78. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Heating and Ventilation Part II..	125
Practical Mathematics Part II... 138		Heating and Ventilation Part III	125
Practical Mathematics Part III.. 138		Steam and Hot-Water Fitting....	125
Mechanical Drawing Part I..... 137		Bacteriology and Sanitation....	125
Mechanical Drawing Part II..... 137		Plumbing Part I.....	126
Mechanical Drawing Part III.... 137		Plumbing Part II.....	126
Heating and Ventilation Part I... 125		Plumbing Part III.....	126

Tuition \$35.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF FIRE PREVENTION AND INSURANCE

(Opened to students in 1910)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

FIRE PREVENTION AND INSURANCE

Outline on page 84

A complete course in fire-resisting construction, and the principles and practice of fire insurance, including inspection, rating, adjusting, and underwriting. Covers a clear explanation of the mathematics and physics necessary for an understanding of the engineering problems involved; a study of combustion in general, and of the loss of life and property due to fires; fireproof construction, with a consideration of the danger from poor buildings, and fire-resisting materials that have stood the test; a building code that would lessen the fire peril; underwriters' requirements for electrical installations; the principles and organization of the fire insurance business; the work of the fire insurance inspector, including the proper preparation of reports, the points to be noted in the inspection of a building, a study of approved equipment for private fire protection, the things which determine the efficiency of public fire service, and the classification and inspection of various hazards; the principles and use of standard fire insurance rating schedules; the principles and laws regulating the form and use of various types of policies; the adjustment and settlement of fire loss; the position of the fire insurance broker, and the principles and practice of underwriting.

This complete course is recommended for every man engaged in any branch of fire insurance work who does not already possess a thorough and systematic knowledge of the subject. It is the only complete course in fire insurance branches offered by any school in the world. Fire insurance work falls naturally into two great divisions: the prevention of fire, and handling the distribution of fire losses. This course gives a knowledge of the entire field, so that the student will understand the relation of the various specialized lines, and be able to choose wisely in which he shall specialize.

The work on fire prevention makes a careful study of all modern public and private fire-protection appliances, and gives particular attention to the possibilities in fire-resisting building construction. The work on fire insurance covers both the big general principles upon which the insurance business is based, and the manner in which these principles are applied to current insurance problems. Prepares for an executive position in any branch of field or office work.

FIRE PREVENTION

Outline on page 85

A course in fireproof construction, and the principles and practice of public and private fire prevention. Covers a clear explanation of the mathematics and physics necessary for an understanding of the engineering problems involved; a study of combustion in general, and of the loss of life and property due to fires; fireproof construction, with a consideration of the danger from poor buildings, and fire-resisting materials that have stood the test; a building code that would lessen the fire peril; underwriters' requirements for electrical installations; the principles and organization of the fire insurance business; the work of the fire insurance inspector, including the proper preparation of reports, the points to be noted in the inspection of a building, a study of approved equipment for private fire protection, the things which determine the efficiency of public fire service, and the classification and inspection of various hazards. Recommended for fire insurance inspectors, field workers, architects and building contractors. Prepares for position as fire insurance inspector.

FIRE INSURANCE

Outline on page 86

A course in the principles and practice of fire insurance. Covers a clear explanation of the necessary mathematics; the principles and organization of the fire insurance business; the work of the fire insurance inspector, including the proper preparation of reports, the points to be noted in the inspection of a building, a study of approved equipment for private fire protection, the things which determine the efficiency of public fire service, and the classification

and inspection of various hazards; the principles and use of standard fire insurance rating schedules; the principles and laws regulating the form and use of various types of policies; the adjustment and settlement of fire loss; the position of the fire insurance broker, and the principles and practice of underwriting. Recommended for fire insurance agents, adjustors, and office workers. Prepares for position as manager of local agency, or adjustor.

FIRE INSURANCE INSPECTOR'S COURSE

Outline on page 86

A special course in the inspection and classification of risks. Covers a clear explanation of the necessary mathematics; the principles and organization of the fire insurance business; the work of the fire insurance inspector, including the proper preparation of reports, the points to be noted in the inspection of a building, a study of approved equipment for private fire protection, the things which determine the efficiency of public fire service, and the classification and inspection of various hazards; underwriters' requirements for electrical installations. Recommended for field workers who already understand building construction. Prepares for position as fire insurance inspector.

FIRE PREVENTION AND INSURANCE

30 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 81. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Fire Insurance Inspection Part II (Construction of Buildings)...	128
Practical Mathematics Part II...	138	Fire Insurance Inspection Part III (Private Fire Protection)..	128
Practical Mathematics Part III..	138	Fire Insurance Inspection Part IV (Public Fire Protection)...	128
Practical Physics Part I.....	138	Fire Insurance Inspection Part V (Public Fire Protection).....	128
Practical Physics Part II.....	138	Fire Insurance Inspection Part VI (Common and Special Haz- ards)	128
Chemistry of Combustion.....	121	Fire Insurance Rating Part I....	130
Fire and Fire Losses	127	Fire Insurance Rating Part II...	130
Fireproof Construction Part I....	127	Fire Insurance Rating Part III..	130
Fireproof Construction Part II...	127	Fire Insurance Law (Including Standard Policy) Part I.....	130
Fireproof Construction Part III..	127	Fire Insurance Law (Including Standard Policy) Part II.....	130
Fireproof Construction Part IV..	127	Fire Insurance Law (Including Standard Policy) Part III.....	130
Building Code	127	Settlement of Losses	130
Underwriters' Requirements for Safe Electrical Installations Part I	128	Fire Insurance Broker.....	130
Underwriters' Requirements for Safe Electrical Installations Part II	128	Fire Insurance Underwriting....	131
Elements of Fire Insurance.....	128		
Fire Insurance Inspection Part I (Reports and Their Prepara- tion)	128		

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

FIRE PREVENTION

21 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 82. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Underwriters' Requirements for Safe Electrical Installations Part II	128
Practical Mathematics Part II...	138	Elements of Fire Insurance.....	128
Practical Mathematics Part III..	138	Fire Insurance Inspection Part I (Reports and Their Preparation)	128
Practical Physics Part I.....	138	Fire Insurance Inspection Part II (Construction of Buildings)...	128
Practical Physics Part II.....	138	Fire Insurance Inspection Part III (Private Fire Protection)..	128
Chemistry of Combustion.....	121	Fire Insurance Inspection Part IV (Public Fire Protection).....	128
Fire and Fire Losses.....	127	Fire Insurance Inspection Part V (Public Fire Protection).....	128
Fireproof Construction Part I....	127	Fire Insurance Inspection Part VI (Common and Special Hazards)	128
Fireproof Construction Part II...	127		
Fireproof Construction Part III..	127		
Fireproof Construction Part IV..	127		
Building Code	127		
Underwriters' Requirements for Safe Electrical Installations Part I	128		

Tuition \$55.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

FIRE INSURANCE

19 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 82. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
*Practical Mathematics Part I...	138	Fire Insurance Inspection Part VI (Common and Special Hazards)	128
*Practical Mathematics Part II...	138	Fire Insurance Rating Part I....	130
*Practical Mathematics Part III.	138	Fire Insurance Rating Part II...	130
Elements of Fire Insurance.....	128	Fire Insurance Rating Part III..	130
Fire Insurance Inspection Part I (Reports and Their Preparation)	128	Fire Insurance Law (Including Standard Policy) Part I.....	130
Fire Insurance Inspection Part II (Construction of Buildings)....	128	Fire Insurance Law (Including Standard Policy) Part II.....	130
Fire Insurance Inspection Part III (Private Fire Protection).....	128	Fire Insurance Law (Including Standard Policy) Part III.....	130
Fire Insurance Inspection Part IV (Public Fire Protection).....	128	Settlement of Losses.....	130
Fire Insurance Inspection Part V (Public Fire Protection).....	128	Fire Insurance Broker.....	130
		Fire Insurance Underwriting....	131

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

FIRE INSURANCE INSPECTOR'S COURSE

12 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 83. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
*Practical Mathematics Part I...	138	Fire Insurance Inspection Part IV (Public Fire Protection).....	128
*Practical Mathematics Part II...	138	Fire Insurance Inspection Part V (Public Fire Protection).....	128
*Practical Mathematics Part III.	138	Fire Insurance Inspection Part VI (Common and Special Hazards)	128
Elements of Fire Insurance.....	128	Underwriters' Requirements for Safe Electrical Installations Part I	128
Fire Insurance Inspection Part I (Reports and Their Preparation)	128	Underwriters' Requirements for Safe Electrical Installations Part II	128
Fire Insurance Inspection Part II (Construction of Buildings)....	128		
Fire Insurance Inspection Part III (Private Fire Protection).....	128		

*Optional work

Tuition \$35.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

DEPARTMENT OF SPECIAL COURSES

(Opened to students in 1909)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

AUTOMOBILE COURSE

Outline on page 90

A course in the construction and operation of standard types of gasoline, electric and steam automobiles. Covers a clear treatment of the simple mathematics necessary for an understanding of the mechanical principles involved; the principles and details of explosion motors; the construction and operation of gasoline automobiles, including engine features, valves, carbureters, transmissions, chassis, and steering and running gear; the principles, construction and management of steam automobiles; the fundamental principles of electricity, and its application in electric automobiles; an unbiased comparison of standard types of electric, steam and gasoline cars, with suggestions for the selection of cars for specific purposes; starting, running and stopping the car, including the prevention of "trouble"; automobile delivery wagons, taxicabs, tractors, and other commercial vehicles; the design and equipment of private and public garages; types, construction and operation of motorcycles and motor boats.

This course is recommended for every man interested in the operation, repair, equipment or manufacture of automobiles. Whether used as a pleasure vehicle, or for commercial purposes, the automobile has become an important factor in the modern system of transportation. Its mechanical perfection makes it dependable in the hands of any one who exercises reasonable care, while its adaptability makes it available for many different purposes. It is, however, a delicate mechanical contrivance, and therefore liable to breakdown through accident or abuse; and, while not complicated in its operation, it involves certain principles of combustion and of mechanism which require study. This course will save time, money and annoyance for the automobile owner who runs his own car, and give him a mastery of his machine that will add much to his pleasure; while it will enable the professional chauffeur to operate

or repair any standard type of car. Prepares for position as chauffeur, garage keeper, or repairman.

AERONAUTICS

Outline on page 90

A course in the theory, construction and operation of dirigible balloons and standard types of aeroplanes. Covers a clear treatment of the mathematics and physics necessary for an understanding of the principles involved; the problems and achievements of the dirigible balloon; the theory of aerial navigation, including a study of the wind, and the art of gliding; an unbiased consideration of standard biplanes and monoplanes, with an analytical study of the achievements and possibilities of aeroplanes of special types; the principles and details of explosion motors, with particular attention to the peculiarities of the aeronautical motor; the design, construction and action of the aerial propeller; contrivances and suggestions for making the aeroplane more practical; the construction and flying of a standard type biplane or monoplane; what aviation offers to the successful aviator.

This course is recommended for every man interested in the theory, construction or operation of dirigible balloons or aeroplanes. While the "conquest of the air" has not yet been made complete, both dirigibles and aeroplanes have already achieved practical success. Unquestionably aviation is yet in its infancy; and it may be presumed that the machines, and even some of the principles covered by this course, will be materially changed or altogether discarded; but the work given here represents the sum of present human knowledge on the subject, and it is upon this knowledge that all subsequent inventions must be based. Gives a thorough, practical, up-to-date knowledge of the science of aeronautics.

MOTION-PICTURE WORK

Outline on page 91

A course in the manufacture and exhibition of moving pictures and the construction and operation of motion-picture machines. Covers a clear treatment of the simple mathematics necessary; the electric principles necessary for an understanding of the motion-picture machine and electric wiring; the principles of the optical

lantern, and their application to motion-picture work; the mechanical devices which are necessary for the successful projection of the pictures in order, and the operation, repair and adjusting of standard makes; the fundamentals of photography; the planning, staging and taking of moving pictures; the construction, operation, and successful management of the motion-picture theater.

This course is recommended for every man interested in the making or showing of moving pictures. It gives thorough and practical instruction on the three chief branches of the motion-picture business—the making of the pictures, the operation of the projecting machine, and the management of the motion-picture theater. From it the owner or manager can get a systematic knowledge of his business that will enable him to cut his operating expenses, and increase his box-office receipts; while the ambitious operator can learn to handle any standard type of projecting machine, and to pass the examination for an operator's license now required by many municipalities. Prepares for position as motion-picture theater manager, or motion-picture operator.

AUTOMOBILE COURSE

19 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 87. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Gasoline Automobiles Part V (Steering and Running Gear) ..	131
Practical Mathematics Part II... 138		Steam Automobiles Part I.....	132
Practical Mathematics Part III.. 138		Steam Automobiles Part II.....	132
Explosion Motors	131	Electrical Principles	124
Gasoline Automobiles Part I (Introductory—Engine Features) ..	131	Electric Automobiles	132
Gasoline Automobiles Part II (Valves—Carbureters)	131	Types of Automobiles.....	133
Gasoline Automobiles Part III (Transmissions)	131	Automobile Driving	133
Gasoline Automobiles Part IV (Chassis)	131	Commercial Vehicles Part I.....	133
		Commercial Vehicles Part II.....	133
		Private Garages and Repairs.....	134
		*Motorcycles and Motor Boats... 133	

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

AERONAUTICS

18 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 88. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Explosion Motors	131
Practical Mathematics Part II... 138		Aeronautical Motor	135
Practical Mathematics Part III.. 138		Aerial Propeller	135
Practical Physics Part I.....	138	Aeronautical Practice Part I....	135
Practical Physics Part II.....	138	Aeronautical Practice Part II... 135	
Dirigible Balloons	134	Building and Flying an Aeroplane Part I	135
Theory of Aviation Part I.....	134	Building and Flying an Aeroplane Part II	135
Theory of Aviation Part II.....	134	Aviation and Its Future.....	136
Types of Aeroplanes Part I.....	134		
Types of Aeroplanes Part II.....	134		

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MOTION-PICTURE WORK

11 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 88. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
*Practical Mathematics Part I...	138	Motion Head Part II.....	136
*Practical Mathematics Part II..	138	Motion Head Part III.....	136
*Practical Mathematics Part III.	138	Photography	137
Electrical Principles.....	124	Motography	137
Optical Lantern	136	Motion-Picture Theater	137
Motion Head Part I.....	136		

*Optional work

Tuition \$25.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.



Instruction Department, American School of Correspondence

DEPARTMENT OF DRAWING AND DESIGN

(Opened to students in 1903)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

STRUCTURAL DRAFTING

Outline on page 96

A special course in the designing and drafting of structural steel work. Covers a clear treatment of the mathematics and physics necessary for handling the engineering problems involved; the selection and use of drawing instruments and materials; practice in mechanical, freehand and perspective drawing; a study of strains and stresses, and the strength of beams, columns and shafts; the design, testing and construction of structural steel for various building work; description and design of roof trusses; instruction and practice in modern methods of drafting standard structural units; the design and drafting of structural steel for bridges and steel framed buildings. Recommended for engineers, builders, and draftsmen who wish to specialize in structural steel work. Prepares for position as structural draftsman or designer.

MACHINE DRAWING AND DESIGN

Outline on page 97

A special course in the designing and drafting of machines and engines. Covers a clear treatment of the mathematics and physics necessary for handling the engineering problems involved; the selection and use of drawing instruments and materials; the fundamentals of mechanical and freehand drawing; the design and drafting of gearing, pulleys, shafts, and other devices used in the transmission and control of mechanical power; the design and preparation of complete sets of working drawings for various types of machines and engines; practice in perspective drawing, as used in machine design. Recommended for machinists, inventors, factory superintendents and foremen, and others interested in machine design. Prepares for position as machine designer, or mechanical draftsman.

ARCHITECTURAL DESIGN

Outline on page 96

A special course in the designing and rendering of architectural ornaments, and the preparation of exhibition drawings. Covers a clear treatment of the simple mathematics necessary; the selection and use of drawing instruments and materials; the fundamentals of mechanical drawing; a study of alphabets, and lettering for various purposes; instruction and practice in freehand and perspective drawing, as used in architecture, with a study of shades and shadows; theory of design and drafting practice as applied to various architectural types; approved methods of rendering in pen and ink; an analytical study of the classical orders of architecture upon which modern design is based. Recommended for architects and draftsmen who wish a complete knowledge of architectural design. Prepares for position as architectural draftsman or designer.

SHEET-METAL PATTERN DRAFTING

Outline on page 97

A special course in the designing and drafting of light and heavy sheet-metal work. Covers a clear treatment of the simple mathematics necessary; the selection and use of drawing instruments and materials; the fundamentals of mechanical drawing, and the preparation of working drawings of various types; the principles and methods of practical tinsmithing; light sheet-metal work, including design and construction of standard articles, with particular attention to sky light and cornice work; the principles, design and construction of steam boilers of standard types. Recommended for plumbers, tinsmiths, roofers, blacksmiths, metal workers, boiler makers and contractors. Prepares for position as sheet-metal designer or draftsman.

MECHANICAL DRAWING

Outline on page 98

A special course in the fundamental principles of mechanical drawing. Covers a clear treatment of the simple mathematics necessary; the selection and use of drawing instruments and materials; the fundamentals of mechanical drawing, and the prepara-

tion of working drawings; the design and preparation of working drawings for various types of machines and engines. Recommended for every man who makes or uses working drawings, architectural plans, or blue prints. Prepares for position as draftsman.

STRUCTURAL DRAFTING

29 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 93. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	*Graphs	140
Practical Mathematics Part II....	138	Strength of Materials Part I....	103
Practical Mathematics Part III....	138	Strength of Materials Part II....	103
Practical Physics Part I.....	138	Statics	103
Practical Physics Part II.....	138	Steel Construction Part I.....	104
Mechanical Drawing Part I.....	137	Steel Construction Part II.....	104
Mechanical Drawing Part II.....	137	Steel Construction Part III.....	104
Mechanical Drawing Part III.....	137	Steel Construction Part IV.....	104
Freehand Drawing	99	Roof Trusses	104
Perspective Drawing	99	Structural Drafting Part I.....	104
Algebra Part I.....	139	Structural Drafting Part II.....	104
Algebra Part II.....	139	Practical Problems in Construc-	
Plane Geometry	139	tion	105
Logarithmic Tables	139	Bridge Engineering Part I.....	108
Trigonometry Part I.....	140	Bridge Engineering Part II.....	108

*Optional work

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ARCHITECTURAL DESIGN

18 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 94. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Perspective Drawing	99
Practical Mathematics Part II....	138	Shades and Shadows	99
Practical Mathematics Part III....	138	Architectural Drawing Part I....	99
Plane Geometry	139	Architectural Drawing Part II....	99
Mechanical Drawing Part I.....	137	Rendering in Pen and Ink.....	99
Mechanical Drawing Part II.....	137	Study of the Orders Part I.....	100
Mechanical Drawing Part III.....	137	Study of the Orders Part II.....	100
Freehand Drawing	99	Study of the Orders Part III.....	100
Architectural Lettering	99	†Hamlin: History of Architecture	

†Standard textbook

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MACHINE DRAWING AND DESIGN

21 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 93. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Algebra Part I.....	139
Practical Mathematics Part II...	138	Algebra Part II.....	139
Practical Mathematics Part III..	138	Plane Geometry	139
Practical Physics Part I.....	138	Logarithmic Tables	139
Practical Physics Part II.....	138	Trigonometry Part I.....	140
Mechanical Drawing Part I.....	137	Machine Design Part I.....	119
Mechanical Drawing Part II.....	137	Machine Design Part II.....	119
*Freehand Drawing	99	Mechanical Drawing Part V.....	137
Mechanical Drawing Part III....	137	Mechanical Drawing Part VI....	137
Mechanical Drawing Part IV....	137	Perspective Drawing	99
Mechanism	118		

*Optional work

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SHEET-METAL PATTERN DRAFTING

14 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 94. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Tinsmithing	126
Practical Mathematics Part II...	138	Sheet-Metal Work Part I.....	126
Practical Mathematics Part III..	138	Sheet-Metal Work Part II.....	126
Mechanical Drawing Part I.....	137	Sheet-Metal Work Part III.....	126
Mechanical Drawing Part II.....	137	Sheet-Metal Work Part IV.....	126
Mechanical Drawing Part III....	137	Construction of Boilers.....	120
Mechanical Drawing Part IV....	137	Types of Boilers.....	121

Tuition \$35.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MECHANICAL DRAWING

9 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 94. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	Mechanical Drawing Part III....	137
Practical Mathematics Part II... 138		Mechanical Drawing Part IV....	137
Practical Mathematics Part III.. 138		Mechanical Drawing Part V.....	137
Mechanical Drawing Part I.....	137	Mechanical Drawing Part VI....	137
Mechanical Drawing Part II.....	137		

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SYNOPSIS OF SUBJECTS IN ENGINEERING DEPARTMENTS

FREEHAND DRAWING—Prepared by HERBERT E. EVERETT, Professor of the History of Art, University of Pennsylvania

METHODS OF FREEHAND WORK: Holding Pencil—Position—Straight Lines—Ellipses—Freehand Perspective—General Principles—Horizontal Line—Eye Level—Parallel Lines—Square—Triangles—Prism—Cylinder—Cone—Concentric Circles

MEASURING AND DRAWING OBJECTS: Testing Drawings by Measurement—Form Drawing—Value Drawing—Value Scale—Varieties of Shading—Directions of Shade Lines—Cross-Hatching

ARCHITECTURAL LETTERING—Prepared by FRANK CHOUTEAU BROWN, Architect

STYLES: Letters for Titles—Various Alphabets—Skeleton Letters—Composition and Spacing—Title Page—Plans—Working Drawings—Inscription Lettering—Lettering for Stone—Shadow—Cast Letters—Raised Letters—Examples of Lettering—Gothic—Roman

SHADES AND SHADOWS—Prepared by H. W. GARDNER, S. B., Associate Professor of Architecture, Massachusetts Institute of Technology

PROBLEMS IN CONSTRUCTION: Finding Shadows of Points and Lines—Shadows of Planes—Method of Determining Shadow—Shadows of Solids—Use of Auxiliary Planes—Shadow in a Spherical Hollow—Use of Planes of Light Perpendicular to Co-ordinate Planes—Short Methods of Construction

PERSPECTIVE DRAWING—Prepared by WILLIAM H. LAWRENCE, S. B., Professor of Architectural Engineering, Massachusetts Institute of Technology

PROBLEMS IN CONSTRUCTION: Station Point—Picture Plane—Ground Line—Horizon—Line of Measurement—Vertical Trace—Horizontal Trace—Bird's-Eye View—Vanishing Point—Planes of Projection—Perspective of a Point—Plane—Line—Method of Revolved Plan—Line of Measures—To Find Perspective of a House, Projections of which are Given—Vanishing Points of Lines—Vanishing Point Diagram—Parallel or One-Point Perspective—Method of Perspective Plan—Curves—Apparent Distortion

ARCHITECTURAL DRAWING—Prepared by FRANK A. BOURNE, S. M., and H. V. von HOLST, A. B., S. B., Architects

Part I

WASH AND WATER COLOR: Line Drawing—Definitions—Importance of Axes—Modeling—Rendering in Wash—Materials—Method of Procedure—Rendering Elevations, Sections, and Plans—Color Hints—Water Color Rendering—Water Color Sketching—Preliminary Studies in Architectural Design—Method of Study—Putting Ideas on Paper—Use of Tracing Paper—Sketching—Materials for Sketching—Measured Work—Measuring Tapes—Datum Lines—Hand Level—Elevation Measurements—Arches—Projections—Inaccessible Portions—Approximations—Rubbings

Part II

THEORY OF DESIGN: Design of Dwellings—Building a House—Sketches—Working Drawings—Full-Size Details—Representation of Materials—Tracing and Blue-Printing—Lettering Contracts—Building for Offices—Design of Colonial House

RENDERING IN PEN AND INK—Prepared by D. A. GREGG, Teacher in Pen and Ink Rendering, Massachusetts Institute of Technology

METHODS OF RENDERING: Materials—Pens—Ink—Paper—Line Work: Quality of Line, Method, Vertical Line—Free Lines—Light and Shade: Lighting, Color of Material, Illustrative Sketches, Obtaining Values by Shadows Only, Accent—Pencil Work—Wash Drawings—Preparing Tint—Handling Brush—Laying Washes—Graded Tints—Water-Color—Rendering—Sketching

STUDY OF THE ORDERS—Prepared by FRANK CHOUTEAU BROWN, FRANK A. BOURNE, S. M., and H. V. von HOLST, A. B., S. B., Architects

Part I

THE ROMAN ORDERS: General Introduction—Description of the Orders—Tuscan—Doric—Ionic—Corinthian—Intercolumniation—Superposition—General Principles—Sketches—Tuscan Over Arcade—Doric over Tuscan—Ionic over Doric—Corinthian over Ionic—Plates for Application of Study of the Orders—Plates Showing Construction of the Orders

Part II

THE GREEK ORDERS: Analysis—Comparison of Greek and Roman—Doric—Order of the Parthenon—Type Form of Greek Doric Order—Moldings—Ionic—Differences between Ionic and Doric—General Type of Ionic—Corinthian—Details—Intercolumniation—Pilasters

Part III

ARCHITECTURE OF THE ROMANS: Arch and Vault—Combination of Arch and Lintel—Character of Architecture—Orders—Early Doric—Difference between Roman and Greek Doric—Classic Doric—Other Forms of Doric—Classic Ionic—Classic Corinthian—Composite—Roman Gateways and Triumphal Arches—Doorways—Windows—Moldings—Pilasters

CARPENTRY—Prepared by GILBERT TOWNSEND, S. B., with Ross & MacFarlane, Montreal

Part I

TIMBER: Classes of Trees—Growth—Wood Structure—Defects—Varieties—Conversion of Timber into Lumber—Characteristics
CARPENTER'S TOOLS: Steel Square—Saws—Planes—Screws—Nails
LAYING OUT: Ground Location—Staking Out

Part II

JOINTS AND SPLICES: Methods of Making Joints and Splices—Examples of Various Types
WALLS AND PARTITIONS: Braced and Balloon Frame—Sill—Corner Posts—Girts—Ledger Board—Braces—Studding—Furring—Cap and Sole—Bridging—Shrinkage of Walls and Partitions
FLOORS: Girders—Joists—Supports and Partitions—Headers and Trimmers—Joist Connections—Crowning—Bridging—Stairs

Part III

ROOF AND ITS LAYOUT: Styles of Roofs—Roof Frame—Ridge—Common Rafters—Valley and Hip Rafters—Jack and Curved Rafters—Attic Partitions
SPECIAL FRAMING: Battered Frames—Truss Partitions—Inclined and Bowled Floors—Heavy Beams and Girders—Balconies and Galleries
TIMBER TRUSSES: King Post Truss—Queen Post Truss—Finck and Open Trusses—Truss Details
TOWERS AND STEEPLES: Styles and Methods of Construction—Details—Joints and Cross Bracing
VAULTS AND GROINS: Layout and Construction

Part IV

OUTSIDE WALL FINISH: Building Paper—Water Table—Clapboards—Siding—Belt Courses
OUTSIDE ROOF FINISH: Finish at Eaves—Box Cornice—Gutters—Skylight Openings—Dormer Windows—Gambrel Roof Finish—Gable Finish—Verge Boards
WINDOW AND DOOR FINISH: Outside Finish—Pulley—Sill—Double Hung Sash—Upper and Lower Sash—Muntins—Mullions—Inside Door Frames—Doors
TRIMMING: Base of Skirting—Wainscoting—Wood Cornices—Wood Ceiling Beams—Stair-Case Finish

STEEL SQUARE—Prepared by MORRIS WILLIAMS, Expert on Joinery and Carpentry

STANDARD STEEL SQUARE: Octagon Scale—To Find Meter and Length of Side for Any Polygon—Diagram for Finding Pitches of Various Degrees—To Determine Relative Length of Run for Rafter and Hip—Use of Steel Square in Laying Out Timbers of Roofs of Equal Pitch—Finding Length of Jack Rafters—Method of Finding Bevels for All Timbers in Roofs of Equal Pitch—Finding Backing of Hip in Gable Roof

STAIR-BUILDING—Prepared by FRED T. HODGSON, Architect and Editor; and MORRIS WILLIAMS, Expert on Joinery and Carpentry

SETTING OUT STAIRS: Making a Pitch Board—Housing Treads and Risers—Connecting Housed String to Newels—Connecting Rail and String to Bottom Newel—Open String

LAYING OUT: Plain Stairs—Straight Flights—Winding Stairs—Circular or Elliptical Stairs—Winders—Platform Stairs—Bullnose Tread—Method of Forming—Open-Newel Stairs—Well-Hole

GEOMETRICAL STAIRWAYS AND HANDRAILING: Wreaths—Projection—Tangent System—Finding Angle between Tangents—Connecting Two Flights with Two Wreath-Pieces—Cutting Out and Twisting Wreath

PLASTERING—Prepared by FRANK CHOUTEAU BROWN, Architect

INTERIOR PLASTERING: Wood Laths—Metal Laths—Lime—Sand—Hair—Water—Method of Mixing—Proportions to Use—Three-Coat Work—Rough Plaster Finish—Two-Coat Work—Finishing Coat—Patent Plaster—Back Plaster—Plaster Cracks—Plaster Molding—Exterior Plastering—Inspection—Selecting Laths—Protecting the Laths—Furring—Diagonal Laths—Putting on Plaster

PAINTING—Prepared by ALVAH HORTON SABIN, M. S., Lecturer in New York University

GENERAL INTRODUCTION: Pigments and Vehicles—Adulteration—Paint and Varnish Brushes—Fillers—Inside Work—Painting Plastered Walls—Outside Work—Repairing—Roof Painting—Painting Structural Metal—Method of Painting Steel—Description of Varnishes—Best Method of Varnishing—Shellac—Interior Finishing—Enamel Paints—New Varnish Finish—Aluminum and Bronze Paints—Glazing

HARDWARE—Prepared by JAMES C. PLANT, Superintendent of Computing Division Office of Supervising Architect, Washington, D. C.

INTRODUCTORY: Nails and Screws—Barn Hinges—Door Butts—Cast-Iron Butts—Spring Butts—Double-Acting Butts—Blind Hinges—Blind Adjuster—Locks—Knobs and Escutcheons—Sash Fasteners, Pulleys and Chains—Bolts—Kick Plates and Push Plates—Transom Hardware

SELECTION AND BUYING OF HARDWARE: Listing Items—Method of Taking Off Quantities—Sketches—Catalogues

ESTIMATING—Prepared by EDWARD NICHOLS, Architect

Part I

PRINCIPLES: Prices Defined—Catalogues—Profit—Percentage—Duplicate Parts—Transportation—Approximate Estimates—Estimating by the Square, by Quantities—Preparation—Units—Rules—Measure of Lines and Surfaces—Areas of Solids—Scale of Wages—Excavation—Stone Work—Window Sets—Face Bricks Complete in Wall—Cost of Concrete—Cost of Chimneys—Prices of Masons' Supplies—Vitrified Pipe—Prices of Lumber—Stairs—Plazas and Porches—Hardware—Roofing—Plastering—Painting—Hot Water and Steam Heating—Plumbing—Gas Fitting—Electric Light Wiring

Part II

METHOD OF TAKING OFF QUANTITIES: Estimate of Residence, Showing Method of Taking Off Quantities and Cost of Same—Excavation—Stonework—Plastering Walls with Cement—Brickwork—Estimating Total Cost of Concreting, of Plastering—Freight—Fares—Insurance—Total Cost of Carpenter Work, of Stairs, of Heating—List Giving Itemized Cost for Complete Installation of Waste and Soil Pipes—Electric Wiring—Total Cost of Residence—Location Sheet of Electric Outlets

CONTRACTS AND SPECIFICATIONS—Prepared by JAMES C. PLANT, Superintendent of Computing Division, Office of Supervising Architect, Washington, D. C.

Part I

GENERAL AND SPECIFIC CONDITIONS: Outline of Work—Studies in Materials—Lumber for Construction and Finish—Roofs—Use of Words and General Requirements—Electric Wiring—General Conditions—Drawings—Specifications—Architect—Payments—Time—Site—Excavation—Masonry Materials—Masonry Construction—Carpentry Construction—Hardware—Plumbing—Heating—Proposal Sheet—Form of Agreement between Owner and Builder—Government Contracts—Number and Value of Buildings Concerned—Bonds

Part II

GENERAL SCOPE OF THE SPECIFICATIONS: Specification Reminder—General Conditions—Specification—Material and Labor—Contractor—Architect—Drawings and Specifications—Time for Completion—Excavation—Preparation of Site—Walls—Cement Coating—Drain-Pipes and Cesspools—Cellar Floor—Brickwork—Carpenter Work—Hardware—Painting—Glazing—Heating—Plumbing—Fixtures—Water Supply—Gas-fitting

LEGAL RELATIONS—Prepared by ELIOT N. JONES, LL. B., and OTIS W. RICHARDSON, LL. B., of the Boston Bar

LAW OF CONTRACTS: Express Contracts and Contracts Implied in Law—Quantum Meruit—Express Contracts—Parties—Consent—Consideration—Statute of Frauds—Conditions—Construction of Contracts—Assignability—Avoidance—Reforming—Penalties and Liquidated Damages—Breach of Contract Operating as Discharge—Discharge by Consent—Waiver—Modification—Suretyship—Agent of Independent Contractor—Power of Agent—Liability of Principal—Duties of Agent to Principal—Delegation of Powers by Agent—Miscellaneous Matters—Architect's Position under Building Contract

BUILDING SUPERINTENDENCE—Prepared by EDWARD NICHOLS, Architect

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ROOFING AND METAL WORK: Tin Roofs—Copper and Slate Roofs—Composition—Gutters and Conductors—Galvanized Work—Skylights

STRENGTH OF MATERIALS—Prepared by EDWARD ROSE MAURER, B. C. E., Professor of Mechanics, University of Wisconsin

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MASONRY AND REINFORCED CONCRETE—Prepared by WALTER LORING WEBB, C. E., Consulting Engineer; and W. HERBERT GIBSON, B. S., C. E., Civil Engineer

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MASONRY MATERIALS: Natural Stone—Testing Stone—Building Stone—Bricks—Concrete Blocks—Cementing Materials—Cement Testing—Chemical Analysis—Specific Gravity—Fineness—Normal Consistency—Time of Setting—Standard Sand—Form of Briquette—Moulds—Mixing—Moulding—Storage of Test Pieces—Tensile Strength—Consistency of Volume—Natural Cement—Portland Cement—Broken Stone—Mortar—Concrete—Waterproofing—Bitumen—Preservation of Steel in Concrete—Fire Protection—Methods of Mixing Concrete—Steel for Reinforcing

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DRAFTING ROOM EQUIPMENT AND PRACTICE: Classification of Drawings—Drafting Room Personnel—Records—Materials—Layout—Ordering Materials—Checking—Shop Bills—Details and Lettering

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FLOW OF WATER IN OPEN CHANNELS: General Formula—Hydraulic Mean Radius—
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MEASUREMENT OF THE FLOW OF STREAMS: Variation of Velocity—Use of Current
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PURIFICATION OF WATER BY SAND FILTRATION: Capacity—Rate of Filtration—
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QUANTITY OF WATER REQUIRED: Water Duty and Flow—Units of Measure

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FLOW OF WATER IN CANALS: Use of Kutter's Formula—Coefficients Used—Study of Meters—Gauging Stations—Measuring Weirs—Francis' Formula

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COST OF WATER POWER: Comparison of Cost—Load Factor—Cost to Consumers

DAMS AND WEIRS—Prepared by W. G. BLIGH, M. Inst. C. E., (London). Inspecting Engineer of Irrigation Works, Department of Interior, Canada

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GRAVITY DAMS: Elementary Theory—Theoretical Profile—Practical Modifications—Graphical and Analytical Calculations—Application to Details of Design—Design of Base of "High" Dam—Analysis of Characteristic Sections of Dams

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OPEN DAMS AND WEIRS: Function of Weir Sluices—Analysis of Design—Pressure on Foundations—Draw Gates—Stoney and Roller Gates—Hydraulic Shutters—Automatic Shutters

SEWERS AND DRAINS—Prepared by A. MARSTON, C. E., Dean of the Division of Engineering, Iowa State College

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SEWAGE DISPOSAL: History—Importance of Sewage Disposal—Composition of Sewage—Chemical Analysis—Methods of Purification—Designs and Construction of Filter Beds—Maintenance of Disposal Plants

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COUNTRY ROADS: Object of Roads—Friction—Resistance to Rolling—Tractive Power and Gradients—Tractive Power of Horses at Different Velocities—Reconnoissance—Topography—Bridge Sites—Final Selection—Mountain Roads—Water on Mountain Roads—Alignment—Construction Profile—Determination of Gradients—Minimum Grade—Undulating Grades—Establishing the Grade—Width and Transverse Contour—Drainage—Earthwork—Tools for Grading—Gravel Roads—Preparing the Gravel—Laying the Gravel—Broken Stone Roads—Size of Stones—Thickness of the Broken Stone—Foundation—Steam Rollers

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BRIDGE ENGINEERING—Prepared by FRANK O. DUFOUR, C. E., Assistant Professor of Structural Engineering, University of Illinois

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STRESS ANALYSIS: Trussed Bridge Development—Definitions—Classes of Trusses—Weights of Bridges—Cooper's Loading Diagram—Method of Moments—Notation—Warren Truss under Dead Loads—Position of Live Load for Maximum Moments—Position of Live Load for Maximum Positive and Negative Shears—Warren Truss under Live Loads—Counters—Maximum and Minimum Stresses—Trusses under Dead and Live Loads—Use of Engine Loads—Position of Wheel Loads for Maximum Shear—Position of Wheel Loads for Maximum Moments—Impact Stresses—Wind-Load Effects—Portals and Sway Bracing—Moments in Plate-Girders—Computation of Dead-Load and Live-Load Moments—Reactions for a Deck Plate-Girder—Maximum Moments in a Deck Plate-Girder—Shears in Plate-Girders—Wheel Positions for Maximum Shears

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ENGINEERING CONSIDERATIONS: Utilization of Existing Maps—Surveying Methods—Preliminary Surveys—Re-Surveys—Selecting a Route—Simple Curves—Elements of Curve—Location of Points by Deflections—Computing the Deflections—Instrumental Work—Obstacles to Location—Modification of Location—Mutual Relations of the Points of a Compound Curve of Two Branches—Transition Curves—Vertical Curves—Slopes and Cross-Sections—Width of Roadbed—Constructive Details—Ditches—Earthwork—Position of Slope Stakes—Computing the Volume—Methods of Excavating—Blasting—Formation of Embankments—Classification of Earthwork—Tunnels—Tunnel Design—Trestles—Framed Trestles—Multiple-Story Construction—Foundation—Trestle Floor Systems—Stringers—Protection Against Fire—Culverts—Cattle Passes

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MISCELLANEOUS TABLES: Radii of Curves—Tangents, External Distances, and Long Chords for 1 Degree Curve—Switch Leads and Distances—Elements of Transition Curve

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COST ANALYSIS ENGINEERING—Prepared by RICHARD T. DANA, Chief Engineer, Construction Service Co.; and HALBERT P. GILLETTE, C. E., Consulting Engineer

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GENERAL INSTRUCTIONS: Engineering—Contract—Drawings—Specifications—Materials Employed—Extra Work—Dividing Line Between Contracts—Verbal Information—Mistakes

GENERAL PROVISIONS: General Drawings—Record Drawings—Notes upon Drawings—Verbal Agreements—Lines and Grades by Engineer—Measurements—Duties of Contractors—Materials—Time—Prices—Inspection—Builders' Insurance—Sanitary Regulations—Liability of Contractor—Damages—Alterations—Payment—Release of Liens—Agreement—Bond

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MAGNETISM: Magnets—Poles—Attraction and Repulsion—Magnetic Induction—Retentivity and Permeability—Lines of Force—Fields of Force—Nature of Magnetism—Earth's Magnetism—Declination—Dip

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THE ELECTRIC CURRENT—Prepared by LAWRENCE K. SAGER, S. B., M. P. L., Patent Attorney and Electrical Expert

ELECTRICAL UNITS: Electromotive Force—Current—Resistance—Volt—Ampere—Ohm—Standard Resistance Coils—Tables

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DIRECT-CURRENT DYNAMOS—Prepared by FRANCIS B. CROCKER, E. M., Ph. D., Professor of Electrical Engineering, Columbia University; and MORTON ARENDT, E. E., Assistant Professor of Electrical Engineering, Columbia University, New York

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DIRECT-CURRENT MOTORS—Prepared by LOUIS DERR, S. B., A. M., Professor of Physics, Massachusetts Institute of Technology

PRINCIPLES: Comparison between Dynamos and Motors—Counter E. M. F.—Fundamental Equation—Efficiency and Losses—Torque—Armature Reaction—Speed Formula

SHUNT MOTORS: Armature Reaction—Direction of Rotation—Starting Resistance—Electrical Connections—Automatic Release—Wiring Connections—Overload Release—Operation of Motor: Starting, Stopping, Reversing, Automatic Starters, Reversing Starters, Speed Control

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MOTOR PRACTICE: Multi-voltage Systems—Mechanical Points of Motor Design—Electrical Points of Motor Design

TYPES OF DIRECT-CURRENT DYNAMOS AND MOTORS—Prepared by W. H. FREEDMAN, C. E., E. E., Head, Dept. of Electrical Engineering, Pratt Institute, Brooklyn, N. Y.

DIRECT-CURRENT GENERATORS: Constant-Current and Constant-Potential Generators—Methods of Driving Generators—Representative Direct-Driven Generators—Indirect-Driven Generators—Generators for Electrolytic Work—Arc-Lighting Generators

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MANAGEMENT OF DYNAMO ELECTRIC MACHINERY—Prepared by FRANCIS B. CROCKER, E. M., Ph. D., Professor of Electrical Engineering, Columbia University, New York

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STORAGE BATTERIES—Prepared by FRANCIS B. CROCKER, E. M., Ph. D., Professor of Electrical Engineering, Columbia University, New York

DEFINITIONS AND PRINCIPLES: Secondary Battery—Primary Cell—Electrolyte—Electrolysis—Chemical Action

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ELECTRIC WIRING—Prepared by CHARLES E. KNOX, E. E., Consulting Electrical Engineer

METHODS: Rigid Conduit—Flexible Metal Conduit—Armored Cable—Molding—Concealed Knob and Tube Wiring—Exposed on Insulators—Two Wire System—Three Wire System

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ELECTRIC LIGHTING—Prepared by GEORGE C. SHAAD, E. E., Professor of Electrical Engineering, University of Kansas

INCANDESCENT LAMPS: Manufacture of Carbon—Voltage and Candle Power—Efficiency—Life—Selection—Distribution—Gem Metalized Filament Lamp—Metallic Filament Lamp—Tantalum Lamp—Tungsten Lamp—Hellon Lamp—Nernst Lamp—Comparison of the Different Types

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ELECTRIC RAILWAYS—Prepared by HENRY H. NORRIS, M. E., Professor of Electrical Engineering, Cornell University

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ELECTRICAL MEASUREMENTS—Prepared by **GEORGE W. PATTERSON, S. B., Ph. D.**, Head, Dept. of Electrical Engineering, University of Michigan

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ALTERNATING CURRENT MACHINERY—Prepared by **WILLIAM ESTY, S. B., M. A.**, Head of Department of Electrical Engineering, Lehigh University

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Professor of Electrical Engineering, University of Kansas

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POWER TRANSMISSION—Prepared by GEORGE C. SHAAD,
E. E., Professor of Electrical Engineering, University of Kansas

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TELEPHONY—Prepared by SAMUEL G. McMEEN, Consulting
Engineer and Telephone Expert; and KEMPSTER B. MILLER,
M. E., Consulting Engineer and Telephone Expert

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THE ELECTRIC TELEGRAPH—Prepared by CHAS. THOM, Chief, Quadruplex Department, Western Union Main Office, New York City

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WIRELESS TELEGRAPHY—Prepared by CHARLES G. ASHLEY, Electrical Engineer

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WIRELESS TELEPHONY—Prepared by CHARLES G. ASHLEY, Electrical Engineer

SYSTEMS AND PROBLEMS: Bell's Radiophone—Selenium Cell—Bell's Photophone—Light Telephony—Telephony by Means of Hertzian Waves—Nature of High Frequency Telephone Current—Oscillation Generators—Telephone Control Generators—Oscillating Circuits—Oscillatory System—Arc Form of Oscillation Generator—Transmitter in Open Radiation Circuit—Receiving Arrangement—Heterodyne Receiver—Two-Way Transmission—Systems of Radial Telephony—Telefunken System—Circuit of Telefunken System—Telephone Electrodes—Ruhmer System—Circuits of Ruhmer System—Poulsen System—Application of Singing Arc—Marjorana System—Circuits of Marjorana System—Fessenden System—De Forest System—Operating Circuits of De Forest System—Collins System—Circuit of Collins System—Motor with Revolving Electrodes

ELECTRIC WELDING—Prepared by JOHN LORD BACON, Consulting Engineer

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METALLURGY—Prepared by RALPH H. SWEETSER, S. B.,
Superintendent, Columbus Iron & Steel Co.

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LOCOMOTIVE BOILERS AND ENGINES—Prepared by LLEWELLYN V. LUDY, M. E., Acting Professor, Steam and Gas Engineering, University of Wisconsin

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SELF-PROPELLED RAILWAY CARS—Prepared by
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HEATING AND VENTILATION—Prepared by CHARLES
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BOILERS: Boiler Setting and Foundations—Boiler Connections—Boiler Fittings or Trimmings—Capacity of Boilers—Grate Surface and Heating Capacity—Coal Consumption

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MOTOR DETAILS: Valves—Ignition—Lubrication—Cooling—Clutch—Crank and Firing Arrangements—Crank Effort—Power on Pistons—Small Gas Engines

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COOLING: Water Jacketing—Radiators and Piping—Circulation—Fans—Anti-Freezing Solutions—Air Cooling

LUBRICATION: Pressure Feeding—Gravity Feeding—Splash System—Oils and Greases—Cups—Effective Lubrication

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ELECTRIC LIGHTING: Incandescent Lamps—Reflectors—Lighting Batteries—Dynamoes—Current Control

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CARBURETERS: Surface—Filtering—Float Feed—Throttle Valves—Floats—Auxiliary Air Inlet—Venturi Tube Type—Troubles

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FUEL SUPPLY: Tank Placing—Fuel Feeding—Piping and Connections—Reserve Tanks

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GEARS: Spur—Helical and Herringbone—Spiral

BRAKES: External Contracting Band—Internal Expanding Band—Principle and Methods of Brake Operation

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SPRINGS: Semi-Elliptic—Full Elliptic—Three-Quarter Elliptic—Platform—Special Forms

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RIMS: Plain Rim—Clincher Rim—Quick-Detachable Rim—Combinations of Q. D. Tires and Demountable Rims

STEAM AUTOMOBILES—Prepared by HERBERT LADD TOWLE, B. A., Consulting Engineer on Gas Engines and Automobile Work

Part I

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ELECTRIC AUTOMOBILES—Prepared by CHARLES B. HAYWARD, Consulting Engineer

ELEMENTARY PRINCIPLES: Electric Circuits—Resistance—Current—Electromotive Force—Primary and Secondary Batteries

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DRIVING THE ELECTRIC: Steering—Controlling—Speed Changes—Volt-ammeter—Brakes—Electric Racing Car—Electric Touring Cars—Long Trips in Electrics

TYPES OF AUTOMOBILES—Prepared by HERBERT LADD TOWLE, B. A., Consulting Engineer on Gas Engines and Automobile Work

EVOLUTION OF TYPES: French Design—Tonneau—Runabout—Roadster—Limousine
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AUTOMOBILE DRIVING—Prepared by MORRIS A. HALL, B. S., Editor "The Commercial Vehicle"

STARTING AND STOPPING CAR: Method—Retarding Spark—Cranking—How to Hold Starting Crank—Closing Throttle—Emergency Brake
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COMMERCIAL VEHICLES—Prepared by CHARLES B. HAYWARD, Consulting Engineer

Part I

GENERAL SURVEY: Standard Design—Requirements in Commercial Field—Reliable Gasoline Cars—Classification of Cars
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MOTORCYCLES AND MOTOR BOATS—

MOTORCYCLES—Prepared by THOMAS APLAND, Chief Draftsman, American School of Correspondence

TYPES: Excelsior—Indian—Harley-Davidson—Thor—Minneapolis—Pope—Reading Standard—Flanders, Flying Merkel—Pierce Four-cylinder—Shickel Two-cycle—New Era
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OPERATION OF MOTORCYCLES: Motor—Valves—Carburetor—Lubrication—Tires—Control—General Instructions

MOTOR BOATS—Prepared by HUGO DIEMER, M. E., Professor of Mechanical Engineering, The Pennsylvania State College

TYPES OF MOTOR BOATS: Round Stern—Overhung Stern—Standard Stern—Torpedo Stern—Compromise Stern—Turbine or Tunnel Type—Canoes—Yachts—Launches
POWER FOR MOTOR BOATS: Gas Engines (Two-Cycle and Four-Cycle, Two-Port and Three-Port)—Installation of Engine—Submerged Exhaust—Outboard Installation

PRIVATE GARAGES AND REPAIRS—Prepared by MORRIS A. HALL, B. S., Editor "The Commercial Vehicle"

GARAGES: Public vs. Private Garages—Types—One Car Design—Long and Square Types—Two and Three Car Designs—General Equipment: Lighting, Heating, Ventilation, Water Supply, Drainage, Source of Power, Oil and Gasoline, Washing Apparatus, Turntable—Tools—General Instructions

REPAIRS: Overhauling the Engine: Removal of Carbon, Pistons, Bearings, Valves—Clutches—Transmission—Driving Shaft—Rear Axle—Springs—Rear Construction—Tires

DIRIGIBLE BALLOONS—Prepared by CHARLES B. HAYWARD, Consulting Engineer

INTRODUCTION: Early Attempts—First Flying Machine—Classification

SIMPLE BALLOONS: Theory—First Balloon—Rozier—Charles—Balloons Successful

PROBLEMS OF THE DIRIGIBLE: Meusnier—Ability to Float—Air Resistance vs. Speed—Critical Size—Fabric—Equilibrium—Balloons—Propeller Location—Radius of Travel

FRENCH DIRIGIBLES: Lebaudy—Patrie—Republique—Jaune—Clement-Baird—Zodiac—Astratorres—Beauchamp

GERMAN DIRIGIBLES: Zeppelin Types—Parseval—Gross—Krell—Veeh

BRITISH AND AMERICAN DIRIGIBLES: Nullis Secundus—Mayfly—Baldwin—America—Akron

ACHIEVEMENTS: German Passenger Service—Wellman's Expedition—Brucker's Proposed Expedition—Miscellaneous Exploits

THEORY OF AVIATION—Prepared by CHARLES B. HAYWARD, Consulting Engineer

Part I

EARLY DAYS OF AVIATION: Cayley—Henson—Langley—Maxim—Langley's Experiments—Wright Brothers' Experiments—United States Government Requirements—Wilbur Wright in Europe—Aerial Experiment Association—Herring-Curtiss Company

ELEMENTARY AERODYNAMICS: Air Resistance—Air Pressure on Moving Surfaces—Ratio of Lift to Drag—Skin Friction—Center of Pressure—Evolution of Curved Supporting Surface

INTERNAL WORK OF WIND: Air Currents—Movements of Plane in Wind—Air Holes—Effective Eddies and Waves—Relative Speed of Wind and Aeroplane

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GLIDING FLIGHT: New Wright Glider—Flights at Kittle Hawk—Lift and Drag Ratio—Montgomery's Gliding Experiments

SOARING FLIGHT: Andrews' Observations—Theory of Soaring—Conditions for Continuous Soaring—Ascending Winds—Horizontal Winds—Pulsating Winds—Aspiration

MODERN AERODYNAMIC RESEARCH: Aerodynamic Institute of Kuchino—Eiffel Laboratory—Results of Research in Various Laboratories—Methods of Experimenting on Test Surfaces—Pressure Measuring Methods—American Research

TYPES OF AEROPLANES—Prepared by CHARLES B. HAYWARD, Consulting Engineer

Part I

STANDARD BIPLANES: Wright—Wright Racer—Wright Model "B"—Curtiss—Voisin—Voisin Tractor Screw—Farman—Sommer—Cody

STANDARD MONOPLANES: Antoinette—Santos-Dumont—Bleriot XI—Bleriot XII—Grade—Pelletier—Pittner

COMPARISON OF STANDARD TYPES: Transverse Control—Aspect Ratio—Incident Angle—Propellers—Rudders—Keels—Mounting—Speed—Flight—Efficiency

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SPECIAL TYPES: Paulhan Trussed Type—Nieuport—Bleriot Limousine—Tatin—Paulhan Aerial Torpedo—Bleriot Racer—Bleriot Canard—Antoinette Armored Monoplane—Short Two-Motor—Dunne—De Marcay—Mooney—Variable Speed Types—Erich Bird-Wing—Queen-Martin—Albatross—Breguet—Tubavion—Moraine—Deperdussin—Valkyrie—Hanriot—Curtiss Racer—Multiplanes—Steel Tube Construction—Fixed Stabilizing Planes

HYDROAEROPLANE: Advantages—Early Attempts—Fabre—Curtiss—Burgess—Brown—Detroit Flying Fish—Transatlantic Possibilities

AERONAUTICAL MOTOR—Prepared by CHARLES B. HAYWARD, Consulting Engineer

GENERAL REQUIREMENTS: Early Types—Automobile vs. Aeronautical Motor—Design Features—Standard Forms

AMERICAN TYPES: Wright—Curtiss—Four-cylinder Water-cooled Type: Harriman—Horizontal-opposed Type: Detroit Aero, Call—Eight-cylinder V-Type: Hendee, Hamilton—Two-cycle Motor: Roberts, Fox, Elbridge—Rotary Type: Adams-Farwell, Brooke, Weinberg, Metz

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THEORY OF ACTION: Pitch—Slip—Thrust—Pitch Ratio—Diameter—Peripheral Speed—Power of Propellers—Blades: Number, Area, Contour, Flexible Type, Fabric-Covered

CONSTRUCTION: Material—Standard Construction—Chauviere Method—American Method—Hollands

PROPELLER DESIGN: True Screw Type—Variable Pitch Type—Problems in Design—Propeller Tests—Number of Propellers—Location—Propeller Efficiency

AERONAUTICAL PRACTICE—Prepared by CHARLES B. HAYWARD, Consulting Engineer

Part I

STABILITY OF THE AEROPLANE: Variations of Center of Pressure—Conditions for Stability—Center of Pressure Curves—Longitudinal and Lateral Stability

AUTOMATIC STABILITY: Air Reaction Principle—Gravity Principle—Objections to Pendulum Devices—Eteve Stabilizer—Gyroscopic Stabilizer—Doutre's Stabilizer—Ellsworth's Stabilizer

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MILITARY IMPORTANCE OF AEROPLANE AND DIRIGIBLE: Attitude of Powers—Adaptability to War—French Military Maneuvers—United States Maneuvers—Guns for Aerial Warfare

WIRELESS TELEGRAPHY IN AERONAUTICS: Early Experiments in Balloons—Dangers from Electric Discharge—Preventive Methods—Wireless on Zeppelins—Wireless on Aeroplanes: Horton's Experiments, Recent Records—General Problems

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AEROPLANE MODELS: Model with Rubber-band Motor—Model with Gasoline Motor

BUILDING A GLIDER: Main Frame—Assembling—Stretching Fabric—Glider with Rudder and Elevator—Learning to Glide

BUILDING A CURTISS: Cost—General Specifications—Main Planes and Struts—Turnbuckles for Truss Wires—Running Gear—Operators—Ailerons—Covering Planes—Making Propeller—Mounting Engine—Controls—Tests—Assembling Biplane

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BUILDING A BLERIOT: Motor—U-Bolts—Truss Frame Built on Fuselage—Running Gear—Wings—Control System—Covering Planes—Installation of Motor—New Features

ART OF FLYING: Practice in Schools—Use of Elevating Plane—Aeroplane in Flight—Center of Gravity—Center of Pressure—Ground Practice—First Flight—Warping Wings—Making Turns—Starting and Landing—Training Professional Aviators

ACCIDENTS AND THEIR LESSONS: Press Reports—Fatal Accidents—Causes—Obstructions—Stopping a Motor—Breakage of Parts—Failure of Control Mechanism—Biplane vs. Monoplane—Record Breaking—Light Machines—Landings—Parachute Garment—Study of Stresses and Fancy Flying—Dirigible Accidents

AMATEUR AVIATORS: Inventors—Would-be Performers—Wright and Curtiss Patents—Use of European Types

AVIATION AND ITS FUTURE—Prepared by CHARLES B. HAYWARD, Consulting Engineer

DIRIGIBLE VS. AEROPLANE: Advantages of Dirigible—Disadvantages—Aeroplane Advantages: Cost, Speed, Strategic Advantages, Behavior in Wind, Portability—Recent Developments in Dirigibles—Air Pilots—Air Harbors—Improvements in Design

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FLYING MACHINE OF FUTURE: Unpromising Types: Ornithopter, Helicopter, Miscellaneous—Monoplane vs. Biplane—Improvements in Construction—Racing Machine—Reefed Supporting Surfaces—Duplicate Power Plant

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TYPES: Dissolving Lantern—Double Lantern and its Operation—Dissolving Shutters—Slide Alignment—Motion Head Lantern—Electrical Circuits

LENSES: Corrections—Focus—Lens Table—Calculations—Focusing—Remedies for Curvature and Keystone Effect—Lens Angle—Lantern Slides

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Part I

MECHANICAL PROBLEMS: Portrayal of Motion—Persistence of Vision—Motion Mechanism—Optical System—Optical Calculations—Shutter—Film Gate—Film Shift Mechanisms—Continuous Projection—Moving Mirrors—Moving Lenses—Threading Up Motion Head—Feed—Take-up Device—Framing Device—Rewind—Automatic Rewind—Operator's Control—Motor versus Crank—Films—Care—Repair—Operator's Duties

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TALKING PICTURES: Nature of Problems—Synchronism of Sounds and Pictures—Length of Records—Classification—Unitary Machines—Synchronous Motors—Dependent Machines—Dial-Regulated Machines—Greenbaum Device—Cinephone—Manufacture—Talking-Picture Camera—Reproduction—Operation of Cinephone

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FILM MANUFACTURERS: List of Companies, with Addresses and Nature of Product

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RECORDING IMAGE: Plates and Films—Exposure—Corrections for Light and Nature of Subject—Exposure Table—Development—Methods—Formulas

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SPECIAL APPLICATIONS: Lantern Slides—Stereographs—Panoramas—Telephotography—Orthochromatic Photography—Colored Photographs—Tri-color Photography

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REPRODUCTION: Photographer—Raw Films—Storage—Perforation—Camera Man—Camera—Film Movement—Talking Picture—Exposure Meters—Duplicate Exposures—Factory Floor Plan—Developing—Printing—Coloring Films—Photographic Equipment—Trick Pictures

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STARTING A THEATER: Location—Financing—Store-front City Theater—Sample Weekly Expense Sheets—Sloping Floor—Picture Screen—Special Buildings—City and Country Problems—Airdome

OPERATION: Audiences—Program—Advertising—Poster Service—Electric Signs—Special Programs—Renting Films—Vaudeville—Accounts—Side Lines for Profit

MECHANICAL DRAWING—Prepared by ERVIN KENISON, S. B., Assistant Professor of Mechanical Drawing and Descriptive Geometry, Massachusetts Institute of Technology; and CHARLES L. GRIFFIN, S. B., Assistant Engineer, the Solvay-Process Co.

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INSTRUMENTS AND MATERIALS USED: Drawing Paper—Drawing Board—T-Square—Triangles—Compasses and Dividers—Bow Pen—Bow Pencil—Drawing Pen—Scales—Protractor—Beam Compasses—Lettering—Plates for Practice in Drawing and Lettering

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Part I

FORCE: Definition—Measurement—Graphical Representation—Parallelogram of Forces—Resultant—Component—Newton's Laws of Gravitation—Center of Gravity—Equilibrium

MOTION: Velocity—Newton's Laws of Motion—Inertia—Centrifugal Force—Gyroscope—Momentum

PRESSURE IN LIQUIDS AND GASES: Pascal's Law—Hydraulic Press—Elevator—Specific Gravity—Archimedes' Principle—Atmospheric Pressure—Barometer—Boyle's Law—Pneumatic Appliances

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WORK AND MECHANICAL ENERGY: Measurement of Work—Simple and Compound Machines—Mechanical Advantage—Law of Machines—Power of Machines—Horse-Power—Potential Energy—Kinetic Energy

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HEAT TRANSMISSION: Conduction—Convection—Radiation—Heating and Ventilation

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Part I

FUNDAMENTAL PROCESSES: Definitions and Mathematical Signs—Notation—Numeration—Addition—Subtraction—Multiplication—Division—Factoring—Cancellation

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FRACTIONS: Definitions—Fractional Units—Reduction of Fractions—Least Common Denominator—Addition, Subtraction, Multiplication, and Division of Fractions—Decimal Fractions—Addition, Subtraction, Multiplication, and Division of Decimals

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DENOMINATE NUMBERS: Extension and Linear Measures, English and Metric, Square and Cubic Measures, Measures of Capacity—Operations: Addition, Subtraction, Multiplication, and Division

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PRACTICAL GEOMETRY: Definitions—Lines—Angles—Polygons—Triangles—Quadrilaterals—Circles—Solids; Prisms, Cylinders, Pyramids, Cones, Spheres

METHOD OF CALCULATION BY LOGARITHMS: Description of Process—Multiplication—Division—Raising to a Power—Extracting a Root

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APPENDIX: Tables of Weights and Measures—Logarithm Table

ALGEBRA—Prepared by WALTER J. RISLEY, B. S., Formerly Instructor in Mathematics, Armour Institute of Technology

Part I

DEFINITIONS: Symbols of Quantity, Operation, Relation, and Abbreviation—Algebraic Expressions—Substitution—Addition — Subtraction — Multiplication—Division—Formulas—Factoring—Fractions

Part II

EQUATIONS: Members—Solution—Transposition—Simple Equations—Containing Two Unknown Quantities—Simultaneous Equations

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RATIO, PROPORTION AND VARIATION: Ratio — Exponent — Consequent—Compound Ratio—Proportion—Extremes and Means—Exponents and Consequents—Mean Proportional

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PROGRESSION: Finite and Infinite Series—Arithmetical—Elements—Geometrical—Circulating Decimals—Harmonic

BINOMIAL THEOREM: Positive Integral Exponents—Binomial Formula—Binomial Theorem for Negative or Fractional Exponents—Miscellaneous Problems

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LINES AND PLANES IN SPACE: General Principles and Definitions—Propositions—Locus in Solid Geometry—Locus of a Point—Surface

DIEDRAL ANGLES: Propositions—Polyhedral Angles

POLYHEDRONS: Definitions—Tetrahedron—Hexahedron — Octahedron — Dodecahedron—Icosahedron—Prism—Propositions—Truncated Prism

PYRAMIDS: Cylinders and Cones—Spheres—Definitions—Propositions

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TABLES: Use of Table of Logarithms of Sines, Cosines, etc.—Use of Table of Natural Sines, Cosines, etc.—Use of Auxiliary Table for Small Angles—Tables

TRIGONOMETRY—Prepared by CHARLES WILBER LEIGH,
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Technology

Part I

FUNDAMENTAL PROCESSES: Sine—Cosine — Tangent—Cotangent—Secant—Cosecant—
Measurement of Angles—Positive and Negative Angles—Relations between Functions
of Angles—Solution of Right Triangles—Measurement of Heights and Distances—
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Acute Angle—Solution of Equations—Interpolation—Plotting a Cosine Curve—Half-
Angles in Terms of Angle—Multiple Angles—Circular or Inverse Trigonometric Func-
tions—Application of Trigonometry

GRAPHS—Prepared by WALTER J. RISLEY, B. S., Formerly In-
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PROPOSITIONS: Graphs of Equations—Graphs in Physics—Graphs in General and Engi-
neering Problems—Graphical Representation of Pure, Imaginary, and Complex Num-
bers—Conic Sections—Simultaneous Quadratic Equations

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Outline on page 151

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clients, the courts, and his professional brethren; the fundamental conceptions and growth of the common law; chattel and real mortgages, their essentials and transfer.

Group I—(Pleading and Practice): The principles and methods of criminal pleading and practice; the law as applied to cases involving a knowledge of medical practice; suits in equity, and various methods of procedure; a consideration of extraordinary legal remedies, such as the mandamus, habeas corpus, quo warranto, etc.; the conflict of laws, and how the proper jurisdiction is determined; the principles and methods of code pleading and practice; the nature of liens, and the rights of the interested parties; commercial accounts as legal evidence; the administration of law, including a comparison of the court and jury systems; the fundamentals of federal law, and the civil and criminal jurisdiction of federal courts; federal procedure in district, circuit and supreme courts; the legal status of State governments, and their relation to the National Government; the principles and practice of appellate court procedure; general suggestions for legal office practice.

Group II—(Commercial and Business Law): The duties, rights, liabilities, and proper conduct of private corporations; the nature of a partnership, relations of partners, and methods of dissolving; the rights, duties and liabilities of bailor and bailee; the principles and practice of guarantee and suretyship; classification of banks, and the laws governing their operations; methods of paying, discharging and foreclosing chattel and real mortgages; the law relating to indemnity bonds and bonding companies; Constitutional restrictions upon the States, the President and the Judiciary, and the content and purpose of the several Amendments; the legal principles of insurance, and their application to fire, life, accident and marine insurance; the duties, powers and liabilities of common carriers, and their public regulation; protection of liberty of contract, and laws affecting labor in general; a consideration of quasi-contracts, and legal remedies for their abuse.

Group III—(Constitutional Law and International Law): Constitutional restrictions upon the States, the President and the Judiciary, and the content and purpose of the several Amendments; the fundamentals of federal law, and the civil and criminal jurisdiction of federal courts; federal procedure in district, circuit

and supreme courts; protection of liberty of contract, and laws affecting labor in general; the duties, rights, liabilities, and proper conduct of private corporations; the legal status of State governments, and their relation to the National Government; proceedings in bankruptcy, and administration of estates; national jurisdiction, the naturalization of foreign born citizens, diplomatic and treaty relations; the history of the law, and the reform of legal abuses; the selection of public officers, and their rights, powers, duties and liabilities; the conflict of laws, and how the proper jurisdiction is determined; State and Federal regulation of commerce between the States; the general powers and functions of municipal corporations and officers, with a study of municipal finances and torts.

Group IV—(Banking and Trust Laws): Classification of banks, and the laws governing their operations; relations of landlord and tenant, a consideration of leases, and the correction of abuses incident to tenancy; commercial accounts as legal evidence; the principles and practice of guarantee and suretyship; the law relating to indemnity bonds, and bonding companies; the rights, duties and liabilities of bailor and bailee; proceedings in bankruptcy, and administration of estates; methods of paying, discharging and foreclosing chattel and real mortgages; the duties, rights, liabilities, and proper conduct of private corporations; the selection of public officers, and their rights, powers, duties and liabilities; the legal principles of insurance, and their application to fire, life, accident and marine insurance; the nature of a partnership, relations of partners, and methods of dissolving; State and Federal regulation of commerce between the States; the nature of liens, and the rights of the interested parties.

Group V—(Irrigation Law and Mining Law): The law governing riparian and appropriation rights, and the adjustment of conflicting claims; relations of landlord and tenant, a consideration of leases, and the correction of abuses incident to tenancy; methods of paying, discharging and foreclosing chattel and real mortgages; methods of acquiring and holding rights in mineral lands, and the laws relating thereto; the rights, duties and liabilities of bailor and bailee; the nature of a partnership, relations of partners, and methods of dissolving; the duties, rights, liabilities, and proper conduct of private corporations; elements of actionable

negligence, and duty of care on the part of specific persons; the nature of liens, and the rights of the interested parties; protection of liberty of contract, and laws affecting labor in general; the legal principles of insurance, and their application to fire, life, accident and marine insurance; the legal status of State governments, and their relation to the National Government; constitutional restrictions upon the States, the President and the Judiciary, and the content and purpose of the several Amendments.

Group VI—(Admiralty Law and Shipping Law): Laws regarding vessels, cargo, voyage, and general provisions for security of life and property; the admiralty court, including liens, pleading and practice; the duties, powers and liabilities of common carriers, and their public regulation; State and Federal regulation of commerce between the States; the fundamentals of federal law, and the civil and criminal jurisdiction of federal courts; federal procedure in district, circuit and supreme courts; the conflict of laws, and how the proper jurisdiction is determined; the nature of liens, and the rights of the interested parties; the rights, duties and liabilities of bailor and bailee; Constitutional restrictions upon the State, the President and the Judiciary, and the content and purpose of the several Amendments; the legal principles of insurance, and their application to fire, life, accident and marine insurance; national jurisdiction, the naturalization of foreign born citizens, diplomatic and treaty relations.

Group VII—(Patent and Copyright Law): The legal protection of trade-marks and trade-names, and the restraint of unfair trade; the nature of a patent, matter patentable, and methods of securing and enforcing patent rights; literary property rights, how secured and enforced; Constitutional restrictions upon the States, the President and the Judiciary, and the content and purpose of the several Amendments; the fundamentals of federal law, and the civil and criminal jurisdiction of federal courts; the duties, rights, liabilities, and proper conduct of private corporations; national jurisdiction, the naturalization of foreign born citizens, diplomatic and treaty relations; the legal principles of insurance, and their application to fire, life, accident and marine insurance; a consideration of extraordinary legal remedies, such as the mandamus, habeas corpus, quo warranto, etc.; protection of liberty of con-

tract, and laws affecting labor in general; methods of paying, discharging and foreclosing chattel and real mortgages; the rights, duties and liabilities of bailor and bailee; the nature of liens, and the rights of the interested parties; a consideration of quasi-contracts, and legal remedies for their abuse.

Group VIII—(Real Estate Law): Relations of landlord and tenant, a consideration of leases, and the correction of abuses incident to tenancy; methods of paying, discharging and foreclosing chattel and real mortgages; the rights, duties, and liabilities of bailor and bailee; the nature of liens, and the rights of the interested parties; the legal principles of insurance, and their application to fire, life, accident and marine insurance; the nature of a partnership, relations of partners, and methods of dissolving; a consideration of quasi-contracts, and legal remedies for their abuse; elements of actionable negligence, and duty of care on the part of specific persons; classification of banks, and the laws governing their operations; the principles and practice of guarantee and suretyship; the law relating to indemnity bonds, and bonding companies; the general powers and functions of municipal corporations and officers, with a study of municipal finances and torts; commercial accounts as legal evidence; protection of liberty of contract, and laws affecting labor in general; bankruptcy systems, proceedings in bankruptcy, and administration of estates.

This complete course is recommended for every man who wants to practice law, or to have a thorough knowledge of law for his own guidance and protection. There is today a growing demand for legally trained men, both to practice at the bar, and to fill positions of responsibility and trust in every line of business. Many men of legal training have chosen law as a profession; but perhaps more are engaged in commercial and mercantile pursuits, using their legal knowledge in the advancement of their business. The heads of many of the large corporations of the country were educated as lawyers. Business men, and men who have any responsibilities, need a working knowledge of the law to prevent them from making serious mistakes. This course covers all the legal knowledge necessary to pass the bar examinations of any State in the Union where the common law prevails; except, of course, that it does not take up in detail the statutes peculiar to each State. The American School guarantees that any student, who fails to pass the bar

examinations after completing this course, will be given free the special instruction and coaching necessary to enable him to pass the subjects (except State Statutes) in which he was deficient. The method of instruction unites the textbook method with the case system, first introduced at Harvard University, and since adopted in modified form by many law schools. This combination enables the student to gain a broad knowledge of the law, and also gives him the ability to "think legally"—that is, reason along legal lines—as the result of his study of hypothetical and actual cases.

The student in General Law is expected to take the Required Subjects in the order given, and then to elect that one of the eight Groups in which he desires to specialize; he is urged not to make his election too early in his course, but to wait until he can be guided by his knowledge of general law. The Required Subjects cover the general legal knowledge required to pass the bar examinations; each of the eight Groups gives specialized knowledge of one of the great subdivisions of law. Group I prepares for the work of a criminal lawyer, and general court practice. Group II prepares for the work of the corporation lawyer, and is particularly recommended for the business man who is studying for his own information. Group III prepares for the work of a constitutional lawyer. Group IV makes a special study of banking and trust law, and is particularly recommended for bankers and trust company officers. Group V prepares for work in the irrigation and mining districts, and is particularly recommended to students living west of the Mississippi River. Group VI makes a special study of the laws affecting maritime commerce, and is recommended for students in the principal ports. Group VII prepares for the work of the patent lawyer, and is recommended for men in the engineering and manufacturing professions who take up law. Group VIII prepares for the work of the real estate lawyer, and is recommended for real estate agents and property owners.

The bar admission requirements of the different States vary too greatly to be classified. Some States prescribe a certain term of study and office practice; some put chief stress upon their own statutes; some require only that the applicant shall understand law in general. The requirements for admission are, however, becoming more exacting each year; and many States now require that the applicant prove that he has had a high school education, or its

equivalent, before he will be admitted to the examination. (The College Preparatory course, page 212, is a full "equivalent.") The student who purposes to practice law is advised to write to the Secretary of State, at his State Capital, for a copy of the requirements of his State.

LAW OF PLEADING AND PRACTICE

Outline on page 153

A special course in criminal and general practice in the State and Federal Courts. Covers the fundamental conceptions and growth of the common law; the principles and methods of criminal pleading and practice; suits in equity, and various methods of procedure; a consideration of extraordinary legal remedies, such as the mandamus, habeas corpus, quo-warranto, etc.; the conflict of laws, and how the proper jurisdiction is determined; the principles and methods of common law pleading and practice; the principles and methods of code pleading and practice; the collection and introduction of evidence of various accepted classes; commercial accounts as legal evidence; the administration of law, including a comparison of the court and jury systems; the fundamentals of federal law, and the civil and criminal jurisdiction of federal courts; federal procedure in district, circuit and supreme courts; the principles and practice of appellate court procedure; general suggestions for legal office practice; the history of the law, and the reform of legal abuses; books of the written and unwritten law, and how to use them; a consideration of the lawyer's duties to his clients, the courts, and his professional brethren. Recommended for lawyers and law students who wish special training in practice at the bar.

REAL ESTATE LAW

Outline on page 154

A special course in the law pertaining to the owning, transferring or handling of real property. Covers a brief treatment of the nature and form of contracts, and the relations of principal and agent; a summary of the law relating to the formation and dissolution of partnerships, and legal forms of bills and notes; the right

to real property, legal restrictions upon its conveyancing, and rules against perpetuities; how a legal title to estate may be obtained; relations of landlord and tenant, a consideration of leases; and the correction of abuses incident to tenancy; methods of acquiring and holding rights in mineral lands, and the laws relating thereto; the law governing riparian and appropriation rights, and the adjustment of conflicting claims; chattel and real mortgages, their essentials and transfer, and methods of payment, discharge and foreclosure; the nature of liens, and the rights of the interested parties; the nature of the various classes of trusts, and the duties of trustees; drawing a will that will carry out the wishes of the testator, and the law concerning the administration of estates; the principles and practice of conveyancing and abstracts; the legal principles of insurance, and their application to fire, life, accident and marine insurance. Recommended for real estate agents, property owners, and business men.

BUSINESS LAW

Outline on page 155

A special course in the branches of law with which every business man should be familiar. Covers the principle, form and legality of contracts, their operation, interpretation and discharge; a consideration of quasi-contracts, and legal remedies for their abuse; the law governing sales, the statute of fraud, and the duties of seller and buyer; the legal relations of principal and agent, and the duties, obligation and liabilities of the two parties; the nature of a partnership, relations of partners, and methods of dissolving; the rights, duties and liabilities of bailor and bailee; the classifications of damages, and the method of bringing action in the various classes; the duties, power and liabilities of common carriers, and their public regulation; the law regarding the making, negotiating and honoring bills, notes and checks; the creation and promotion of private corporations, with a consideration of their duties, rights, liabilities, and proper conduct; classification of banks, and the laws governing their operation. Recommended for every business man, for his protection and guidance.

BANKING AND TRUST LAW

Outline on page 155

A special course in the law relating to the organization and conduct of banking and trust companies. Covers the principle, form and legality of contracts, their operation, interpretation and discharge; classification of banks, and the laws governing their operations; the law regarding the making, negotiating and honoring bills, notes and checks; the principles and practice of guarantee and suretyship; the law relating to indemnity bonds and bonding companies; the nature of the various classes of trusts, and the duties of trustees; the legal relations of principal and agent, and the duties, obligations and liabilities of the two parties; drawing a will that will carry out the wishes of the testator, and the law concerning the administration of estates; commercial accounts as legal evidence; proceedings in bankruptcy, and administration of estates. Recommended for bankers, trust company officers, cashiers, bank clerks, etc.

ADMIRALTY LAW

Outline on page 154

A special course in the law as it affects ships and cargoes. Covers the principle, form, and legality of contracts, their operation, interpretation and discharge; the rights, duties and liabilities of bailor and bailee; the duties, powers and liabilities of common carriers, and their public regulation; State and Federal regulation of commerce between the States; the admiralty court, including liens, pleading and practice; laws regarding vessels, cargo, voyage, and general provisions of security of life and property. Recommended for men employed by transportation companies, or engaged in foreign trade.

CONSTITUTION AND GOVERNMENT

Outline on page 153

A special course in the historic and larger side of American law. Covers a study of the Constitution of the United States, including the constitutional division of powers, the express powers of Congress, restrictions imposed upon the States, the President

and the Judiciary, and the content and purpose of the several Amendments; the general powers and functions of municipal corporations and officers, with a study of municipal finances and torts; the selection of public officers, and their rights, powers, duties and liabilities; national jurisdiction, the naturalization of foreign born citizens, diplomatic and treaty relations; State and Federal regulation of commerce between the States; the legal status of State governments, and their relation to the National Government; protection of liberty of contract, and laws affecting labor in general. Recommended for men interested in State or national politics, members of the diplomatic and consular service, and students of history, civics, or sociology.

PATENT AND COPYRIGHT LAW

Outline on page 155

A special course in the law governing the securing and enforcing of patents and copyrights. Covers the principle, form, and legality of contracts, their operation, interpretation and discharge; the nature of a patent, matter patentable, and methods of securing and enforcing patent rights; literary property rights, how secured and enforced; the legal protection of trade-marks and trade-names, and the restraint of unfair trade. Recommended for every man who manufactures or handles patented or copyrighted articles.

GENERAL LAW

56 Instruction Books

SUBJECTS IN THE COURSE

NOTE: After completing the Required Subjects, the student will elect the Group in which he wishes to specialize; see page 141. For synopsis of any subject, see page indicated by number following title.

REQUIRED SUBJECTS

Subject	Page	Subject	Page
Law of Persons Part I.....	156	Wills and Administration of Es-	
Law of Persons Part II.....	156	tates Part I.....	162
Law of Contract Part I.....	156	Wills and Administration of Es-	
Law of Contract Part II.....	156	tates Part II.....	162
Criminal Law Part I.....	157	Title to Estates.....	162
Criminal Law Part II.....	157	Law of Damages.....	163
Law of Torts Part I.....	157	Law Books and How to Use Them	163
Law of Torts Part II.....	157	Equity Part I.....	163
Law of Torts Part III.....	157	Equity Part II.....	163
Law of Torts Part IV.....	157	Equity Part III.....	163
Law of Agency Part I.....	158	Trusts and Duties of Trustees....	164
Law of Agency Part II.....	158	Common Law Pleading and Prac-	
Law of Personal Property.....	159	tice Part I.....	164
Law of Sales Part I.....	159	Common Law Pleading and Prac-	
Law of Sales Part II.....	159	tice Part II.....	164
Private Corporations Part I.....	159	Common Law Pleading and Prac-	
Bills, Notes, and Checks Part I...	160	tice Part III.....	164
Bills, Notes, and Checks Part II...	160	Law of Evidence Part I.....	165
Law of Real Property Part I.....	161	Law of Evidence Part II.....	165
Law of Real Property Part II.....	161	Constitution of the United States	
Law of Real Property Part III.....	161	Part I.....	166
Law of Real Property Part IV.....	161	Legal Ethics.....	166
Mortgages, Chattel and Real		Philosophy of the Law.....	167
Part I.....	161		

GROUP I (Pleading and Practice)

Criminal Pleading and Practice..	167	Commercial Accounts as Evidence	170
Medical Jurisprudence.....	167	Actions at Law and Suits in	
Equity, Pleading and Practice....	168	Equity.....	170
Legal History and Law Reform....	168	Federal Law and Federal Courts..	170
Extraordinary Legal Remedies....	168	Federal Procedure.....	171
Conflict of Laws Part I.....	169	State Constitutions and Statutory	
Conflict of Laws Part II.....	169	Laws.....	171
Code Pleading and Practice.....	169	Appellate Court Procedure.....	171
Law of Bankruptcy.....	170	Office Practice.....	172

GROUP II (Commercial and Business Law)

Private Corporations Part II....	159	Constitution of the United States	
Private Corporations Part III....	159	Part III.....	166
Law of Partnership.....	172	Insurance Law Part I.....	174
Ballments.....	172	Insurance Law Part II.....	174
Guaranty and Suretyship.....	172	Common Carriers Part I.....	174
Liens.....	173	Common Carriers Part II.....	174
Mortgages, Chattel and Real Part		Liberty of Contract and Labor	
II.....	161	Laws.....	175
Corporate Suretyship.....	174	Law of Quasi-Contracts.....	175
Constitution of the United States			
Part II.....	166		

GROUP III (Constitutional and International Law)

Constitution of the United States	166	State Constitutions and Statutory	171
Part II	166	Laws	171
Constitution of the United States	166	Law of Bankruptcy	170
Part III	166	International Law	175
Federal Law and Federal Courts	170	Legal History and Law Reform	168
Federal Procedure	171	Public Officers	176
Liberty of Contract and Labor	175	Conflict of Laws Part I	169
Laws	175	Conflict of Laws Part II	169
Private Corporations Part II	159	Interstate Commerce Law	176
Private Corporations Part III	159	Municipal Corporations	176

GROUP IV (Banking and Trust Law)

Banks and Banking Laws	177	Private Corporations Part II	159
Landlord and Tenant	177	Private Corporations Part III	159
Commercial Accounts as Evidence	170	Municipal Corporations	176
Guaranty and Suretyship	172	Insurance Law Part I	174
Corporate Suretyship	174	Insurance Law Part II	174
Ballments	172	Law of Partnership	172
Law of Bankruptcy	170	Interstate Commerce Law	176
Mortgages, Chattel and Real Part	161	Liens	173
II	161		

GROUP V (Irrigation and Mining Law)

Irrigation Law	177	Conveyancing and Abstracts	178
Landlord and Tenant	177	Negligence	178
Mortgages, Chattel and Real Part	161	Liens	173
II	161	Liberty of Contract and Labor	175
Mining Law	178	Laws	175
Ballments	172	Insurance Law Part I	174
Law of Partnership	172	Insurance Law Part II	174
Private Corporations Part II	159	State Constitutions and Statutory	171
Private Corporations Part III	159	Laws	171
Mortgages, Chattel and Real Part	161		
II	161		

GROUP VI (Admiralty and Shipping Law)

Law of Shipping	179	Liens	173
Admiralty Law	179	Ballments	172
Common Carriers Part I	174	Constitution of the United States	166
Common Carriers Part II	174	Part II	166
Interstate Commerce Law	176	Constitution of the United States	166
Federal Law and Federal Courts	170	Part III	166
Federal Procedure	171	Insurance Law Part I	174
Conflict of Laws Part I	169	Insurance Law Part II	174
Conflict of Laws Part II	169	International Law	175

GROUP VII (Patent and Copyright Law)

Law of Trade-Marks and Trade-	179	Extraordinary Legal Remedies	168
Names	179	Liberty of Contract and Labor	175
Law of Patents	179	Laws	175
Law of Copyright	180	Mortgages, Chattel and Real Part	161
Constitution of the United States	166	II	161
Part II	166	Ballments	172
Federal Law and Federal Courts	170	Liens	173
Private Corporations Part II	159	Law of Quasi-Contracts	170
International Law	175	Actions at Law and Suits in	170
Insurance Law Part I	174	Equity	170
Insurance Law Part II	174		

GROUP VIII (Real Estate Law)

Landlord and Tenant	177	Negligence	178
Mortgages, Chattel and Real Part	161	Conveyancing and Abstracts	178
II	161	Guaranty and Suretyship	172
Ballments	172	Corporate Suretyship	174
Liens	173	Municipal Corporations	176
Insurance Law Part I	174	Commercial Accounts as Evidence	170
Insurance Law Part II	174	Liberty of Contract and Labor	175
Law of Partnership	172	Laws	175
Law of Quasi-Contracts	175	Law of Bankruptcy	170

Tuition \$150.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

LAW OF PLEADING AND PRACTICE

21 Instruction Books

SUBJECTS IN THE COURSE

NOTE: This course is open only to law graduates and practicing lawyers; for description, see page 147. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Philosophy of the Law.....	167	Law of Evidence Part I.....	165
Criminal Pleading and Practice..	167	Law of Evidence Part II.....	165
Equity Pleading and Practice....	168	Commercial Accounts as Evidence	170
Extraordinary Legal Remedies...	168	Actions at Law and Suits in	
Conflict of Laws Part I.....	169	Equity	170
Conflict of Laws Part II.....	169	Federal Law and Federal Courts..	170
Common Law Pleading and Prac-		Federal Procedure	171
tice Part I.....	164	Appellate Court Procedure.....	171
Common Law Pleading and Prac-		Office Practice	172
tice Part II.....	164	Legal History and Law Reform...	168
Common Law Pleading and Prac-		Law Books and How to Use Them	163
tice Part III.....	164	Legal Ethics	166
Code Pleading and Practice.....	169		

Tuition \$60.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

CONSTITUTION AND GOVERNMENT

9 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 149. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Constitution of the United States		Public Officers	176
Part I	166	International Law	175
Constitution of the United States		Interstate Commerce Law.....	176
Part II	166	State Constitutions and Statutory	
Constitution of the United States		Laws	171
Part III	166	Liberty of Contract and Labor	
Municipal Corporations.....	176	Laws	175

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

REAL ESTATE LAW

22 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 147. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Contracts and Agency. (Summary)	180	Liens	173
Partnership, Bills, and Notes. (Summary)	181	Trusts and Duties of Trustees	164
Law of Real Property Part I.....	161	Wills and Administration of Estates Part I.....	162
Law of Real Property Part II.....	161	Wills and Administration of Estates Part II.....	162
Law of Real Property Part III.....	161	Conveyancing and Abstracts.....	178
Law of Real Property Part IV.....	161	Insurance Law Part I.....	174
Title to Estates.....	162	Insurance Law Part II.....	174
Landlord and Tenant.....	177	Fire Insurance Law (Including Standard Policy) Part I.....	130
*Mining Law	178	Fire Insurance Law (Including Standard Policy) Part II.....	130
*Irrigation Law	177	Fire Insurance Law (Including Standard Policy) Part III.....	130
Mortgages, Chattel and Real Part I	161		
Mortgages, Chattel and Real Part II.....	161		

*Optional work

Tuition \$60.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ADMIRALTY LAW

10 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 149. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Law of Contract Part I.....	156	Common Carriers Part I.....	174
Law of Contract Part II.....	156	Common Carriers Part II.....	174
Law of Agency Part I.....	158	Interstate Commerce Law.....	176
Law of Agency Part II.....	158	Admiralty Law	179
Bailments	172	Law of Shipping.....	179

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

BUSINESS LAW

18 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 148. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Law of Contract Part I.....	156	Law of Damages	163
Law of Contract Part II.....	156	Common Carriers Part I.....	174
Law of Quasi-Contracts.....	175	Common Carriers Part II.....	174
Law of Sales Part I.....	159	Bills, Notes, and Checks Part I...	160
Law of Sales Part II.....	159	Bills, Notes, and Checks Part II...	160
Law of Agency Part I.....	158	Private Corporations Part I.....	159
Law of Agency Part II.....	158	Private Corporations Part II.....	159
*Law of Partnership.....	172	Private Corporations Part III.....	159
Ballments	172	Banks and Banking Laws.....	177

*Optional work

Tuition \$55.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

BANKING AND TRUST LAW

14 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 149. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Law of Contract Part I.....	156	Law of Agency Part I.....	158
Law of Contract Part II.....	156	Law of Agency Part II.....	158
Banks and Banking Laws.....	177	Wills and Administration of Es-	
Bills, Notes, and Checks Part I...	160	tates Part I.....	162
Bills, Notes, and Checks Part II...	160	Wills and Administration of Es-	
Guaranty and Suretyship.....	172	tates Part II.....	162
Corporate Suretyship.....	174	*Commercial Accounts as Evidence	170
Trusts and Duties of Trustees....	164	*Law of Bankruptcy.....	170

*Optional work

Tuition \$40.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

PATENT AND COPYRIGHT LAW

5 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 150. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Law of Contract Part I.....	156	Law of Copyright	180
Law of Contract Part II.....	156	Law of Trade-Marks and Trade-	
Law of Patents	179	Names	179

Tuition \$20.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SYNOPSIS OF SUBJECTS IN DEPARTMENT OF LAW

LAW OF PERSONS—Prepared by DONALD L. MORRILL, A. M., Author of "School Laws" and "Treatise on Constitution of Illinois"

Part I

INTRODUCTORY OUTLINE AND DEFINITIONS: Classification of Persons—Males and Females—Free Men and Slaves—Legitimates and Illegitimates—Citizens and Aliens—Indians—Civil Death—Infants and Adults—Classification According to Domestic Relations—Insane Persons

RIGHT OF PERSONAL SECURITY: Absolute and Relative Rights—Personal Security—Injuries to the Person—Duress—Injuries to Health—Nuisances—Injuries to Reputation—Defamation—Slander—Libel—Defenses—Slander of Title or Property

RIGHT OF PERSONAL LIBERTY: Writ of Habeas Corpus—Extradition—Ne Exeat

CITIZENS AND ALIENS: Definition of Citizens—Citizenship by Birth—Indians—Negroes—Citizenship by Naturalization—By Succession—By Marriage—Expatriation—Aliens—Rights of Aliens—Disabilities—Treaty Rights—Statutory Rights—Alien Enemies

MARRIAGE AND DIVORCE: Definition—Marital Incapacity—Effect of Fraud—Of Duress—Marriage Ceremony—Foreign Marriages—Illegal Marriages—Annulment—Divorce—Defenses to Action—Effect of Divorce upon Wife and Children—Property Rights—Disabilities Imposed—Foreign Divorces—Separate Maintenance

Part II

HUSBAND AND WIFE: Common Law Disabilities—Enabling Statutes—Personal Rights of Husband—Of Wife—Property Rights of Husband—Of Wife—Transactions between Husband and Wife—Rights against Third Person—Husband's Liabilities to Third Persons—Wife's Liabilities—Criminal Liability—Marriage Settlements

PARENT AND CHILD: Duties, Rights, and Liabilities of Parents—Duties and Rights of Children—Illegitimate Children—Commitment to Institutions

GUARDIAN AND WARD: Kind of Guardianship—Power of Guardian as to Person and Estate of Ward—Duty of Guardian to Ward—To Third Person—Rights and Liabilities of Ward—Contracts between Guardian and Ward—Guardianship Accounts—Guardian's Bonds—Guardian De Son Tort

INFANCY: Duration—Void and Voidable Acts—Valid Contracts of Infants—Voidable Contracts—Liability for Torts—Criminal Liability—Infants as Witnesses—Statutory Protection—Equitable Protection

PERSONS UNDER MENTAL DISABILITY: Classification—Jurisdiction—Procedure—Adjudication and Its Results—Conservatorship

LAW OF CONTRACT—Prepared by HENRY C. JONES, A. B., LL. B., Assistant Professor of Law, The George Washington Uni- versity

Part I

AGREEMENT: Basis of All Contracts—Distinction between Agreement and Contract—Agreements Result from Offer and Acceptance—Express and Implied Contracts—Offer Must Be Definite—Forms of Offer and Acceptance—Necessity and Manner of Acceptance—Acceptance of Offer

FORM: Classes—Contracts under Seal—Simple Contracts—Statute of Fraud—Form Required by Statute

CONSIDERATION: Simple or Parol Contract—Consideration Need not Be Money or Money Value—Mutual Promises—Subscriptions—Promise to Do What is Already Bound to Do—Distinguished from Motive and Moral Obligation—Past Consideration—Failure of Consideration

CAPACITY OF PARTIES: Power of State to Contract—Contracts of Aliens, Convicts and Infants—Torts Connected with Contracts of Infants—Incapacity of Married Women to Contract—Husband's Liability for Wife's "Necessaries"—Contracts of Insane Persons and Drunkards—Contracts of Corporations

REALITY OF CONSENT: Mistake—Misrepresentation—Fraud—Duress—Undue Influence

Part II

LEGALITY OF OBJECT: Agreements in Violation of Statute—In Breach of Sunday Laws—In Breach of Usury Laws—Wagers or Gambling Transactions—Insurance Contracts—Agreements against Public Policy—Tending to Injure Public Service—"Lobbying" Contracts—Tending to Obstruct Legal Process—Tending to Encourage Litigation—In Restraint of Trade—Effective Illegality—Agreements Legal in One Place but Illegal in Another—Agreements Legal at One Time but Illegal at Another—Securities Given for Money Due or to Be Due on Illegal Transaction

OPERATION OF CONTRACT: Who Have Rights and Liabilities—Duty on Third Persons—Assignment of Contracts—Assignability Distinguished from Negotiability—Joint Rights and Obligations—Several Rights and Obligations

INTERPRETATION OF CONTRACT: Proof of Document—Proof of Terms of Agreement—Construction of Contracts

DISCHARGE OF CONTRACT: By Waiver—By Cancellation—By Rescission—Substitute Agreement—Substantial Performance—Application of Payments—Discharge by Breach—Discharge of Impossibility of Performance—Discharge by Operation of Law

CRIMINAL LAW—Prepared by PERCY BORDWELL, LL. B.,
Ph. D., Professor of Law, State University of Iowa

Part I

NATURE OF CRIME: Public Wrong—Punishable by State—Criminal Process—Crime Distinguished from Tort—Consent of Injured Party—Fault of Injured Party—Condonation—Participation of Public Officer

KINDS OF CRIMES: Felonies—Misdemeanors—Statutory and Common-Law Crimes—Malum in se and Malum Prohibitum

JURISDICTION OVER CRIME: Federal and State—No Common-Law Jurisdiction of Crime in Federal Courts—Theories of Criminal Jurisdiction—Territorial and Non-territorial Jurisdiction

CRIMINAL ACT: Necessity of an Act—Omission of an Act—Means of Commission—Remoteness—Contributing Acts—Preparation—Attempts—Proximity to Completed Crime—Possibility of Completed Crime—Present Ability—Conspiracy—Solicitation

CRIMINAL INTENT: Guilty Mind—Motive—Ignorance of Law—Mistake of Fact—Presumption or Inference of Intent—Transferred Intent—Specific Intent

CRIMINAL RESPONSIBILITY: Insanity—Intoxication—Coverture—Infancy and Incorporation

JUSTIFICATION AND EXCUSE: Public Authority—Domestic Authority—Self-Defense—Defense of Dwelling and Property—Coercion—Necessity—Custom

PARTIES IN CRIME: Common Design—Principal and Agent—Statutory Crime—Principals in the First Degree—In the Second Degree—Accessories

Part II

CRIMES AGAINST THE PERSON: Assault—Battery—Mayhem—Rape—Murder—Man-slaughter

CRIMES AGAINST DWELLING HOUSE: Burglary—Arson

LARCENY: Property Subject of Larceny—Property or Goods of Another—Wrongful Taking—Fraudulent Taking—Without Consent of Owner—Intent to Steal—Aggravated Larcenies

OTHER CRIMES AGAINST PROPERTY: Embezzlement—Receiving Stolen Goods—Obtaining Property by False Pretenses—Forgery—Criminal Conspiracy—Criminal Libel—Offenses against Public Justice or Authority—Against the Public Peace—Crimes against Religion and Morals—Public Nuisances

LAW OF TORTS—Prepared by GUY C. H. CORLISS, Profes-sorial Lecturer on Torts, Equity Jurisprudence, and Private Inter-national Law, University of North Dakota

Part I

WHAT IS LEGAL TORT: Distinguished from Moral Wrong; from Crimes; from Breach of Contract—Basis of All Torts

ASSAULT: Right of Protection—Danger Must be Imminent—Act Judged from Standpoint of Innocent Party—Assault Must Be Unlawful

BATTERY: Definition—When Unlawful

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LAW OF AGENCY—Prepared by RAY G. MACDONALD, Ph. B., LL. B., Professor of the Law of Agency, The John Marshall Law School, Chicago

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LAW OF PERSONAL PROPERTY—Prepared by HUGH E. WILLIS, A. M., LL. M., Assistant Professor of Law and Secretary of the Law Faculty, University of Minnesota

PROPERTY RIGHTS: Classification—Rights to Acts and Forbearances—Absolute and Qualified Property—Limitations—History of Personal Property

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LAW OF SALES—Prepared by EDWARD T. LEE, A. B., LL. B., Dean of The John Marshall Law School, Chicago

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PRIVATE CORPORATIONS—Prepared by HOWARD S. ABOTT, B. L., Master in Chancery, United States Circuit Court. Lecturer on Public and Private Corporations, Law College University of Minnesota

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BILLS, NOTES, AND CHECKS—Prepared by AMASA M. EATON, A. M., LL. B., Chairman of the Rhode Island Board of Commissioners on Uniformity of State Legislation

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LAW OF REAL PROPERTY—Prepared by ALBERT MARTIN KALES, A. B., LL. B., Associate Professor of Law, Northwestern University Law School

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MORTGAGES, CHATTEL AND REAL—Prepared by JOHN R. ROOD, LL. B., Professor of Law, University of Michigan

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WILLS AND ADMINISTRATION OF ESTATES—Prepared by CHARLES S. CUTTING, LL. D., Judge of Probate Court of Cook County, Illinois

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TITLE TO ESTATES—Prepared by JOHN R. ROOD, LL. B., Professor of Law, University of Michigan

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LAW OF DAMAGES—Prepared by ISAAC FRANKLIN RUSSELL, J. D., LL. D., D. C. L., Professor of Law, New York University. Chief Justice of the Court of Special Sessions in the City of New York

INTRODUCTION: General Principles—Damnum Absque Injuria—Injuria Sine Damno—Province of Court and Jury

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LAW BOOKS AND HOW TO USE THEM—Prepared by JOHN C. TOWNES, LL. D., Dean of the Law Department, University of Texas

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EQUITY—Prepared by HENRY H. INGERSOLL, B. A., M. A., LL. D., Dean of Law Department, University of Tennessee

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TRUSTS AND DUTIES OF TRUSTEES—Prepared by GEORGE L. CLARK, A. B., LL. B., Professor of Law, University of Michigan

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COMMON LAW PLEADING AND PRACTICE—Prepared by ROBERT W. MILLAR, LL. B., Lecturer, Northwestern University Law School

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LAW OF EVIDENCE—Prepared by 'GEORGE E. CHIPMAN, A. M., LL. B., Professor of Law, The John Marshall Law School, Chicago

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CONTRACTS AND AGENCY (SUMMARY)—Prepared by JOHN A. CHAMBERLAIN, A. B., LL. B., Formerly Lecturer on Suretyship, Western Reserve University Law School

CONTRACTS: Defined—Offer, Acceptance and Agreement—Parties—Consideration—Express and Implied—Unilateral and Bilateral, Executory and Executed Contracts—Contracts of Infants—For Benefit of Third Persons—Insane Persons, Idiots, Drunkards—Married Women—Contract in Writing—Statute of Frauds—Contracts by Correspondence and Telegraph—Revocation—Contracts under Seal—Sunday Contracts—Illegal Contracts—Wagering or Gambling Contracts—Fraud and Duress—Impossible Contracts—Conflict of Laws—Assignments of Contracts—Joint and Several Liability—Discharge by Performance and Tender—By Subsequent Agreement—Warranty and Remedies for Breach—Rescission and Discharge by Breach—By Bankruptcy—Remedies for Breach—Equity and Specific Performance—Forms

PRINCIPAL AND AGENT: Who May Be Principal—Who Agent—How Appointed—Purposes of Agency—Ratification of Agency—Classification of Agents—Duties of Principal to Agent—Duties and Liabilities of Principal to Third Persons—Of Agent to Principal—Rights and Liabilities of Agent to Third Persons—Undisclosed Principal—Apparent Authority of Agent—Secret Instructions—Wrongful Acts—Delegation of Authority—Agent's Authority to Collect—Agent's Signature to Written Instruments—Factors—Brokers—Auctioneers—Del Credere Agency—Real Estate Brokers—Termination of Agency—Revocation by Operation of Law—Agency Coupled with an Interest

PARTNERSHIP, BILLS, AND NOTES (SUMMARY)—Prepared by JOHN A. CHAMBERLAIN, A. B., LL. B., Formerly Lecturer on Suretyship, Western Reserve University Law School

PARTNERSHIP: How Created—Who May Be Partners—Name—Agreements as between Partners—Partnership as to Third Parties—Powers and Property—Liability to Persons Held Out as Partners—Duties and Liabilities of Partners as to Each Other—Liability of Partnership to Third Persons—Liability of Individual Members for Partnership Obligations—Change of Membership—Death of a Partner—Survivorship—Dissolution of Partnerships—Distribution of Assets—Limited Partnership—Form of Partnership Agreement

CORPORATIONS: Nature—Distinguished from Partnerships—Powers—Creation—Names—Kinds—When Existence Commences—Charter a Contract—De Facto Corporations—Promoters—Reorganization—Consolidation—Meetings and Elections—Voting at Meetings, Quorum and Proxy—Stockholders—Certificate of Stock—Directors—By-Laws, Rules and Regulations—Capital Stock—Payment of Shares of Stock—Calls and Assessments—Watered Stock—Changing Capitalization—Common and Preferred Stock—Dividends—Certificates of Stock not Negotiable Instruments—Individual Liability of Stockholders for Debts—Officers and Agents—Execution of Contracts and Negotiable Instruments—Ultra Vires Acts—Rights and Liabilities of Foreign Corporation—Liability of Corporation for Its Torts and Crimes—Dissolution of Corporations

NEGOTIABLE INSTRUMENTS: Negotiability Distinguished from Assignability—Law Merchant—Promissory Notes—Checks—Certification of Checks—Bonds—Collateral and Judgment Notes—Certificates of Deposit—Requisites of Negotiable Instruments—Parties to Rights and Liabilities of Drawee—Of Acceptor—Of Maker—Blank Indorsement—Indorsement in Full—Without Recourse—For Collection or Deposit—Liability of Indorser—Forgery and Alteration of Negotiable Instruments—Fraud and Duress—Lost or Stolen Negotiable Instruments—Real and Personal Defenses to Negotiable Instruments—Consideration—Presentment and Acceptance of Drafts—Time of Payment and Days of Grace—Innocent Purchaser for Value without Notice—Presentment for Payment of Negotiable Instruments—Notice of Dishonor and Protest—Certificate of Protest



Accounting Department



Stenographic and Mailing Departments

DEPARTMENT OF COMMERCE, ACCOUNTANCY AND BUSINESS ADMINISTRATION

(Opened to students in 1909)

NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

ACCOUNTANCY AND BUSINESS ADMINISTRATION

Outline on page 188

A complete course in accountancy and administrative organization. Includes all the work of the Department, except shorthand and typewriting. Covers the principles of single and double entry bookkeeping; training in opening, keeping, closing and auditing complete sets of books; systematizing and installing of modern efficiency methods for progressive business houses; special accounting systems for the great specialized businesses; modern methods and devices for lessening and checking the work of the bookkeeper; auditing all classes of private or public accounts; the law as it relates to "commercial paper," corporations and partnerships, banking and loans, and other everyday business matters; thorough practice in business correspondence; up-to-date methods of recording, billing and filing; analysis of manufacturing and departmental costs, and the planning of cost systems for any line of business; methods of organizing and managing departments and businesses of all types.

This complete course is recommended for every business man who does not already possess a systematic knowledge of the branches that it covers. Too many men, particularly those just entering business, make the mistake of stopping their training too soon. They know how to keep one set of books, or handle the work of one department; but they know nothing of general accounting or executive work; and that lack of information regarding the higher positions continually holds them back, while the man who has looked ahead gets the advancement for which he has fitted himself. This complete course is for the man who will be satisfied only when he has reached the top. It will give the inexperienced man a thorough training in commercial practice, or enable the man with business experi-

ence to systematize his knowledge, and master by study the branches in which he has had no experience. It will fit the student either to fill a high managerial position, or to pass the examinations for the degree of C. P. A. (Certified Public Accountant) in any State that offers this degree.

C. P. A. examinations are held by the following states: California, Colorado, Connecticut, Florida, Georgia, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Virginia, and Washington. Applicants for a C. P. A. certificate are examined on their knowledge of accounting practice, auditing, and commercial law; many States also require of the applicant a general education equivalent to that of a four year high school course; this work is covered by the College Preparatory course of the American School (see page 212). For particulars regarding State requirements, time and place of examinations, etc., the inquirer is advised to write to his Secretary of State, at the State capital. Most of the States which do not now offer the C. P. A. degree are expected to do so in a year or two in response to the public demand. Men who are practicing as public accountants at the time of the passage of such a law are sometimes given the degree, without examination, in recognition of their experience; but this degree has little value unless it has training behind it. The man whose State has not yet recognized accountancy as a profession will be wise to begin at once his preparation for a State examination which may soon be required of him.

ACCOUNTING AND AUDITING

Outline on page 189

Omits the work in cost accounting and administrative organization. Covers the principles of single and double entry bookkeeping; training in opening, keeping, closing and auditing complete sets of books; systematizing and installing of modern efficiency methods for progressive business houses; special accounting systems for the great specialized businesses; modern methods and devices for lessening and checking the work of the bookkeeper; auditing all classes of private or public accounts; the law as it relates to "commercial paper," corporations and partnerships, banking and

loans, and other everyday business matters; thorough practice in business correspondence; up-to-date methods of recording, billing and filing. Recommended for the accountant who wants to understand all the different branches of his work, and for the bookkeeper or clerk who wishes to reach the head of his profession. Prepares for position as chief accountant or auditor.

PRACTICAL BOOKKEEPING AND ACCOUNTING

Outline on page 190

Accounting practice for all lines of business; no auditing included. Covers the principles of single and double entry bookkeeping; training in opening, keeping, and closing complete sets of books; systematizing and installing of modern efficiency methods for progressive business houses; special accounting systems for the great specialized businesses; modern methods and devices for lessening and checking the work of the bookkeeper; thorough practice in business correspondence. Recommended for the practical bookkeeper who wishes to understand all branches of accounting. Prepares for position of chief accountant.

BUSINESS ADMINISTRATION

Outline on page 191

A special course in administrative organization. Not a short cut for the inexperienced man, but a chance for the man of experience to systematize and increase his knowledge. Covers the law as it relates to "commercial paper," corporation and partnership, banking and loans, and other everyday business matters; thorough practice in business correspondence; up-to-date methods of recording, billing and filing; analysis of manufacturing and departmental costs, and the planning of cost systems for any line of business; methods of organizing and managing departments of businesses of all types. Recommended for the experienced business man, department manager, expert accountant, etc., who wishes to work into the administrative end of business affairs. Prepare for position as department manager, systematizer or executive.

SHORTHAND, TYPEWRITING AND BOOKKEEPING

Outline on page 192

Includes the work of bookkeeping, handling of correspondence and office practice required of a general office assistant. Covers the principles of single and double entry bookkeeping; up-to-date methods of opening, keeping and closing of complete sets of books used by progressive business houses; modern methods and devices for lessening and checking the work of the bookkeeper; thorough practice in business correspondence; up-to-date methods of recording, billing and filing; general shorthand work, taught by the American system, which is based on the Pitmanic; the operation of any standard typewriter, taught by the modern "touch" system. Recommended for the young man or young woman desiring comprehensive training in the fundamentals of a business career. Prepares for position as stenographer, bookkeeper, or private secretary.

PRACTICAL BOOKKEEPING

Outline on page 190

A short course in bookkeeping, handling of correspondence and general office practice. Covers the principles of single and double entry bookkeeping; up-to-date methods of opening, keeping and closing of complete sets of books used by progressive business houses; modern methods and devices for lessening and checking the work of the bookkeeper; thorough practice in business correspondence. Recommended for the employer who wishes a knowledge of what an ordinary set of books should show, and for the young man or young woman entering business through the bookkeeping department. Prepares for position as bookkeeper.

AUDITING

Outline on page 189

An advanced course in the work of the professional auditor, open only to men thoroughly trained in practical bookkeeping and accounting. Covers auditing all classes of private or public accounts; the law as it relates to "commercial paper," corporations and partnerships, banking and loans, and other everyday business

matters. Since the auditor checks and proves the work of the bookkeeper, he must be familiar with all branches of bookkeeping, and have in addition the special knowledge offered in this course. Recommended for experienced accountants who wish to get into C. P. A. work. Prepares for position as auditor, or gives training in law and auditing necessary for C. P. A. examinations.

COMMERCIAL LAW

Outline on page 191

A short practical course in law as it ordinarily affects everyday business transactions. Covers the laws pertaining to "commercial paper," corporations and partnerships, banking and loans, etc. Recommended for every business man as a protection against the legal entanglements that arise from lack of information on business law. For complete law course, see Department of Law, page 141.

COST ACCOUNTING

Outline on page 191

A short course in up-to-date cost accounting, open only to men having a knowledge of general bookkeeping methods. Covers modern methods of organizing and managing a cost department; analysis of manufacturing and departmental costs, and the planning of cost systems for any line of business. Recommended for every executive who needs a working knowledge of cost finding, and for the bookkeeper or clerk who wishes to become an expert in costs. Prepares for position as factory cost accountant.

SHORTHAND AND TYPEWRITING

Outline on page 192

A course in stenography and the handling of correspondence. Covers general shorthand work, taught by the American system, which is based on the Pitmanic; the operation of any standard typewriter, taught by the modern "touch" system; thorough practice in business correspondence. Recommended to any young man or young woman who contemplates entering business. Prepares for position as stenographer and office assistant.

ACCOUNTANCY AND BUSINESS ADMINISTRATION

49 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 183. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Commercial Arithmetic Part I....	193	Accounting for Modern Corporations	199
Commercial Arithmetic Part II....	193	Practical Accounting Problems...	199
Theory of Accounts Part I.....	193	Accounting Practice and Procedure	200
Theory of Accounts Part II.....	193	Business English	200
Single Proprietor's and Partners' Accounts	194	†Baker: Correct English	
Wholesale, Commission, and Storage Accounts	194	Business Correspondence	200
Corporation Accounts	195	Commercial Law Part I.....	201
Single Entry Bookkeeping—Comparative Statements	195	Commercial Law Part II.....	201
The Voucher System—Accounting Charts	195	Commercial Law Part III.....	201
Billing and Order Recording....	196	Commercial Law Part IV.....	201
Retailers' Accounts	196	Commercial Law Part V.....	201
Department Store Accounts Part I	196	Auditing Part I.....	201
Department Store Accounts Part II	196	Auditing Part II.....	201
Contractors' Accounts	197	Auditing Part III.....	201
Bank Bookkeeping Part I.....	197	Administrative and Industrial Organization	202
Bank Bookkeeping Part II.....	197	Purchasing and Stores Department	203
Mechanical Bookkeeping	197	Advertising and Sales Organization	203
Trustees', Executors', and Stock Brokers' Accounts	197	The Credit Organization.....	203
Accounting for Clubs, Hotels, and Societies	198	The Shipping Department.....	203
Brewers' Accounts	198	Correspondence and Filing.....	204
Insurance Accounts Part I.....	198	Business Statistics	204
Insurance Accounts Part II.....	198	Records of Labor and Manufacturing Orders	204
Real Estate Accounting.....	198	General Expense and Cost Summaries	205
Publishers' and Printers' Accounts	199	Machine Shop Management.....	205
		Cost Analysis Engineering.....	205

†Standard textbook

Tuition \$105.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

ACCOUNTING AND AUDITING

36 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 184. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Theory of Accounts Part I.....	193	Accounting for Clubs, Hotels, and Societies	198
Theory of Accounts Part II.....	193	Brewers' Accounts	198
Single Proprietor's and Partners' Accounts	194	Insurance Accounts Part I.....	198
Wholesale, Commission, and Storage Accounts	194	Insurance Accounts Part II.....	198
Corporation Accounts	195	Real Estate Accounting.....	198
Single Entry Bookkeeping—Comparative Statements	195	Publishers' and Printers' Accounts	199
The Voucher System—Accounting Charts	195	Accounting for Modern Corporations	199
Billing and Order Recording.....	196	Practical Accounting Problems...	199
Retailers' Accounts	196	Accounting Practice and Procedure	200
Department Store Accounts Part I	196	Business English	200
Department Store Accounts Part II	196	†Baker: Correct English	200
Contractors' Accounts	197	Business Correspondence	200
Bank Bookkeeping Part I.....	197	Commercial Law Part I.....	201
Bank Bookkeeping Part II.....	197	Commercial Law Part II.....	201
Mechanical Bookkeeping	197	Commercial Law Part III.....	201
Trustees', Executors', and Stock Brokers' Accounts	197	Commercial Law Part IV.....	201
		Commercial Law Part V.....	201
		Auditing Part I.....	201
		Auditing Part II.....	201
		Auditing Part III.....	201

†Standard textbook

Tuition \$85.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

AUDITING

8 Instruction Books

SUBJECTS IN THE COURSE

NOTE: This course is open only to men thoroughly trained in practical bookkeeping and accounting; see page 186. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Commercial Law Part I.....	201	Commercial Law Part V.....	201
Commercial Law Part II.....	201	Auditing Part I.....	201
Commercial Law Part III.....	201	Auditing Part II.....	201
Commercial Law Part IV.....	201	Auditing Part III.....	201

Tuition \$35.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

PRACTICAL BOOKKEEPING AND ACCOUNTING

30 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 185. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Commercial Arithmetic Part I....	193	Bank Bookkeeping Part II.....	197
Commercial Arithmetic Part II....	193	Mechanical Bookkeeping	197
Theory of Accounts Part I.....	193	Trustees', Executors', and Stock	
Theory of Accounts Part II.....	193	Brokers' Accounts	197
Single Proprietor's and Partners'		Accounting for Clubs, Hotels, and	
Accounts	194	Societies	198
Wholesale, Commission, and Stor-		Brewers' Accounts	198
age Accounts	194	Insurance Accounts Part I.....	198
Corporation Accounts	195	Insurance Accounts Part II.....	198
Single Entry Bookkeeping—Com-		Real Estate Accounting.....	198
parative Statements	195	Publishers' and Printers' Accounts	199
The Voucher System—Accounting		Accounting for Modern Corpora-	
Charts	195	tions	199
Billing and Order Recording.....	196	Practical Accounting Problems...	199
Retailers' Accounts	196	Accounting Practice and Proced-	
Department Store Accounts Part I	196	ure	200
Department Store Accounts		Business English	200
Part II	196	†Baker: Correct English	
Contractors' Accounts	197	Business Correspondence	200
Bank Bookkeeping Part I.....	197		

†Standard textbook

Tuition \$70.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

PRACTICAL BOOKKEEPING

16 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 186. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Commercial Arithmetic Part I....	193	The Voucher System—Accounting	
Commercial Arithmetic Part II....	193	Charts	195
Theory of Accounts Part I.....	193	Billing and Order Recording	196
Theory of Accounts Part II.....	193	Purchasing and Stores Depart-	
Single Proprietor's and Partners'		ment	203
Accounts	194	The Shipping Department.....	203
Wholesale, Commission, and Stor-		Business Statistics	204
age Accounts	194	Business English	200
Corporation Accounts	195	†Baker: Correct English	
Single Entry Bookkeeping—Com-		Business Correspondence	200
parative Statements	195		

†Standard textbook

Tuition \$45.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

BUSINESS ADMINISTRATION

19 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 185. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Administration and Industrial Organization	202	General Expense and Cost Summaries	205
Purchasing and Stores Department	203	Machine Shop Management.....	205
Advertising and Sales Organization	203	Cost Analysis Engineering.....	205
The Credit Organization.....	203	Commercial Law Part I.....	201
The Shipping Department.....	203	Commercial Law Part II.....	201
Correspondence and Filing.....	204	Commercial Law Part III.....	201
Business Statistics	204	Commercial Law Part IV.....	201
Records of Labor and Manufacturing Orders	204	Commercial Law Part V.....	201
		Business English	200
		†Baker: Correct English	200
		Business Correspondence	200

†Standard textbook

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

COST ACCOUNTING

8 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 187. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
The Voucher System—Accounting Charts	195	Records of Labor and Manufacturing Orders	204
Administration and Industrial Organization	202	General Expense and Cost Summaries	205
Purchasing and Stores Department	203	Machine Shop Management.....	205
The Shipping Department.....	203	Cost Analysis Engineering.....	205

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

COMMERCIAL LAW

5 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 187. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Commercial Law Part I.....	201	Commercial Law Part IV.....	201
Commercial Law Part II.....	201	Commercial Law Part V.....	201
Commercial Law Part III.....	201		

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SHORTHAND, TYPEWRITING, AND BOOKKEEPING

18 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 186. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
American Shorthand System		Wholesale, Commission, and Storage Accounts	194
Part I	205	Corporation Accounts	195
American Shorthand System		Single Entry Bookkeeping—Comparative Statements	195
Part II	205	The Voucher System—Accounting Charts	195
American Shorthand System		Billing and Order Recording	196
Part III	205	Correspondence and Filing	204
†Van Sant: Touch Typewriting		Business English	200
Commercial Arithmetic Part I	193	†Baker: Correct English	
Commercial Arithmetic Part II	193	Business Correspondence	200
Theory of Accounts Part I	193		
Theory of Accounts Part II	193		
Single Proprietor's and Partner's Accounts	194		

†Standard textbook

Tuition \$50.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SHORTHAND AND TYPEWRITING

8 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 187. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
American Shorthand System		†Van Sant: Touch Typewriting	
Part I	205	Correspondence and Filing	204
American Shorthand System		Business English	200
Part II	205	†Baker: Correct English	
American Shorthand System		Business Correspondence	200
Part III	205		

†Standard textbook

Tuition \$30.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SYNOPSIS OF SUBJECTS IN

COMMERCE, ACCOUNTANCY, AND BUSINESS ADMINISTRATION

COMMERCIAL ARITHMETIC—Prepared by CHARLES
WILBER LEIGH, B. S., Associate Professor of Mathematics, Ar-
mour Institute of Technology

Part I

FUNDAMENTAL PROCESSES: Definitions — Mathematical Signs—Notation—Addition—
Rapid Addition—Subtraction — Multiplication — Short Methods — Division—Checking
Methods—Factoring—Cancellation

FRACTIONS: Reduction of Fractions—Greatest Common Divisor—Least Common Mul-
tiple—Least Common Denominator—Addition—Subtraction—Multiplication—Division—
Short Methods

DECIMALS: Addition—Subtraction—Multiplication—Division—Buying and Selling by the
Hundred and Thousand—Approximations—Aliquot Parts

PERCENTAGE: Base—Rate—Percentage—Increase—Decrease—Amount

DENOMINATE NUMBERS: Definitions — Measures—Extension—Capacity—Weight—Time
—Reduction and Operation

APPENDIX: Tables of Weights and Measures

Part II

POWERS AND ROOTS: Exponent—Radical Sign—Square Root

MENSURATION: Angles—Triangles—Parallelograms — Rules for Estimating Painting,
Plastering, Flooring, Roofing, Carpeting—Circles—Rectangular Solids—Lumber—Cyl-
inders—Spheres

COMMERCIAL METHODS: Commission and Brokerage—Commercial Discount—Balance—
Bank Discount—Present Worth and True Discount—Partial Payments

INTEREST: Simple—Compound—Face of a Note—Interest on Daily Balance—Bank Dis-
count—Present Worth and True Discount—Partial Payments

EQUATION OF ACCOUNTS: Simple Accounts—Compound Accounts

APPENDIX: Cube Root—Logarithms

THEORY OF ACCOUNTS—Prepared by JAMES B. GRIFFITH
F. I. A. (Mich.), Formerly Head Department of Commerce, Account-
ancy, and Business Administration, American School of Correspond-
ence

Part I

DEFINITIONS: Commercial and Accounting Terms—Bookkeeping — Debit—Credit—Bal-
ance—Rules for Debit and Credit

METHODS OF BOOKKEEPING: Single Entry—Double Entry—Principles of Double En-
try—Advantages

ACCOUNT BOOKS: Classes—Order Book—Day Book—Cash Book—Journal—Sales Book
—Purchase Book—Ledger—Forms and Uses of Account Books

RECORDING TRANSACTIONS: Sample Transactions Recorded in Model Set

PROMISSORY NOTES: Bills Receivable—Bills Payable—Bill Book—Acceptances—Dis-
count and Exchange

BANK DEPOSITS: Signature Card—Check Books—Pass Books—Indorsements—Depositing
Cash—Treatment of Petty Cash—Illustration of Model Set

Part II

CLASSES OF ACCOUNTS: Personal—Real—Representative—Nominal—Merchandise—Pur-
chase—Sales

CLASSES OF ASSETS: Fixed—Active or Floating—Passive or Speculative—Fictitious—
Examples

REVENUE: Revenue Accounts—Receipts—Expenses—Subdivisions of Expense

JOURNALIZING: Rules—Three Column Journal Illustrated

POSTING: Rules—Routine—Posting from Journal—Posting from Cash Book

TRIAL BALANCE: Definition—Its Purpose—What It Proves

CLASSIFICATION OF ACCOUNTS: Arrangement in Ledger—Demonstration of Model Ledger

CASH DISCOUNTS: Discounts Allowed Charged to Revenue—Two Methods of Recording—Entering in Cash Book—Posting—Discounts Earned a Source of Profit

PROFIT AND LOSS: Profit and Loss Account—Trading Account—Trading Account, How Constructed—Turnover—Manufacturing Account—Transfer of Gross Profit—Transfer of Net Profit—Merchandise Inventory

BALANCE SHEET: What Is It—How Constructed—Arrangement of Assets and Liabilities—Examples

JOURNALIZING NOTES: When Received—When Paid—When Collected by Bank—When Discounted—When Note Drawing Interest Is Discounted—When Note Drawing Interest Is Paid—When Discounted Note Is Not Paid—When Note Is Past Due—When Renewed Note Has Been Discounted—When We Give or Pay Note—When Our Note Has Been Discounted—When We Pay Our Note with Interest—When We Discount Our Note—When We Pay for Goods with Our Note—When We Renew Note—When We Renew Our Discounted Note

JOURNALIZING DRAFTS: When Our Sight Draft Is Paid—When Discounting Time Draft—When We Accept—When We Pay Acceptance—When We Pay Sight Draft

SINGLE PROPRIETOR'S AND PARTNERS' ACCOUNTS—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

RETAIL BUSINESS: Opening the Books—Books Used—Journal Ledger—Statements—Proprietor's Account—Sample Transactions—Model Set in Grocery Business

INVENTORY: How Recorded—Pricing

CLOSING THE BOOKS: Trading Account, Profit and Loss Statement, and Balance Sheet from Model Set

RETAIL COAL BUSINESS: Center-Ruled Ledger—Sales, Cash, and Scale Books—Treatment of Uncollectible Accounts—Sample Transactions—Model Set

DEPARTMENTAL RECORDS: Purchase and Sales Records—Sales Tickets—Cash Book—Illustrations

PARTNERSHIP: Partnership Agreements—Kinds of Partners—Participation in Profits—Interest on Investment—Capital and Personal Accounts—Opening and Closing Partnership Books—Closing Entries—Model Set—Sale of Partnership—Division of Profits—Division of Assets—Examples

WHOLESALE COMMISSION, AND STORAGE ACCOUNTS—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

BOOKS AND FORMS: Purchase Ledger—Sales Ledger—General Ledger—Order Blanks—Sales Books—Invoice Register—Cash Book—Petty Cash Voucher—Check Register—Cash Received Book—Combined Order and Sales Record—Abstract of Sales—Trial Balance Book

CONTROLLING ACCOUNTS: Sales—Purchase—Advantages

SUBDIVISIONS OF EXPENSE: Sales Expense—Advertising—Salesmen's Salaries—Traveling Expense—Packing and Shipping

COMMISSION AND BROKERAGE BUSINESS: Merchandise Brokers—Manufacturer's Agent—Shipments—Agent's or Factor's Account—Consignments—Principal's Account—Commission Account

PRODUCE SHIPPER'S BOOKS: Purchase Book—Shipment Book—Shipment Ledger—Cash Book—Journal

TREATMENT OF ACTUAL SALES: Shipper's Trading Account—Sample Transactions—Model Set

COMMISSION MERCHANT'S BOOKS: Receiving Book—Cash Book—Sales Book—Consignment Ledger—Consignment Ledger Controlling Account—Model Set

STORAGE: Warehousing Companies—Storage Accounts—Calculating Storage Charges—Special Forms Required

CORPORATION ACCOUNTS—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

CORPORATIONS: How Classified—Stock—Non-Stock—Public—Private

JOINT STOCK COMPANIES: How Distinguished from Corporations—How Like Corporations

CREATION OF CORPORATIONS: Requirements—Stockholders—Stock Certificates

CAPITALIZATION: Capital and Capital Stock—Kinds of Stock—Common—Preferred—Treasury Stock—Watered Stock—Stock Subscriptions

MANAGEMENT OF CORPORATIONS: Powers and Duties of Directors and Officers—Powers of Corporations—Rights of Stockholders—Dividends, Cash, and Stock—Closing Transfer Books—Stockholders' Meetings—Sales of Stock Below Par

CORPORATION BOOKKEEPING: Books Required—Stock Certificate—Stock Transfer—Stock Ledger—Minute Book—Installment Book—Stock Register—Dividend Book

OPENING ENTRIES: When Stock Is Sold for Cash—When Only a Part of Authorized Issue Is Subscribed—When Paid for Partly in Cash and Partly in Property—When Issued in Payment of Property, Part of Stock to be Donated to Treasury—When Treasury Stock Is Sold—Treatment of Premium on Stock—Reduction of Working Capital—Entries in Stock Books—Model Set—Stock Issued for Promotion

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RECORDING CREDIT INFORMATION: Filing—Card Transcripts—Branch House Credits—Collections

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THE SHIPPING DEPARTMENT—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

SHIPPING CLERK: Information Required—Class Rates—Commodity Rates—Freight Tariffs—Filing Tariffs—Index—Condensed Rate File—Classification Index—Commodity Rate File—Routing Shipments

FILING ORDERS: Back Orders—Checking Shipments—Export Shipping—Freight Claims—Express Shipments

RETAIL DELIVERY SYSTEMS: Routing Deliveries—Delivery Sheet—C. O. D. Deliveries—Undelivered Goods—Special Deliveries

CORRESPONDENCE AND FILING—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

OPENING AND DISTRIBUTING MAIL: Departmental Distribution — Interdepartment Correspondence

CORRESPONDENCE SHORT CUTS: Dictating by Number—Form Paragraphs—Talking Machines for Dictation—Correspondence Requisitions—Complaints and Changes of Address—Stenographer's Reference Index—Making Corrections

COPYING CORRESPONDENCE: Carbon Copies—Mechanical Copiers

STENOGRAPHIC DIVISION: Records of Work

HINTS FOR STENOGRAPHERS: Telegrams—Don'ts

FILING DIVISION: The File Clerk

FILING SYSTEMS: Flat Files—Vertical Filing—Methods of Indexing—Numerical Indexing—Alphabetical Indexing—Geographical Indexing—Subject Index—Selecting the Index

MISCELLANEOUS FILING: Salesmen's Correspondence—Correspondence of Temporary Value—Orders—Invoices—Documents and Legal Papers—Clippings—Drawings and Maps—Credit Reports

FILING HELPS: Guiding—Transferring—Sorting

SELECTING FILING EQUIPMENT: Transfer Files

BUSINESS STATISTICS—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

STATISTICAL DEPARTMENT: Sales Costs—Records of Shipments—Returned Goods—Salesmen's Records—Mail Orders—Expense Distribution—Total Commodity—Sales—Department Sales—Trading Statements—Customers' Profit Records—Value of Profit Figuring

ADMINISTRATIVE COSTS: Executive—Accounting—Office — Mailing—Purchasing—Mailing Room Reports—Postage Reports—Stationery and Supplies—Summary of Administrative Expense—Profit and Loss Statements

MAILING ROOM MACHINERY: Addressing Machines—Folding Machines—Milling Machines—Letter-printing Machines

RECORDS OF LABOR AND MANUFACTURING ORDERS—Prepared by JAMES B. GRIFFITH, F. I. A. (Mich.), Formerly Head Department of Commerce, Accountancy, and Business Administration, American School of Correspondence

LABOR RECORDS: Co-operation of Labor

WAGE SYSTEMS: Day Wage, Piece Rate, Premium

METHODS OF TIME KEEPING: Productive and Non-Productive Labor—Piece Workers—Time Keeping Systems—Mechanical Recorders

PRODUCTION TIME RECORDS: Daily Time Card, Job Cards, Cumulative Records, Coupon System

PIECE WORK RECORDS: Record of Production

PAYING EMPLOYEES: Pay-Roll Records—Cost Records—Department Waste—Standard Costs—Inefficiency Labor—Comptroller and Accountant

RECORD OF EMPLOYEES: Personal Record Necessary—Application, Employees, and Past Employee's Card

MANUFACTURING ORDERS: Production Orders—Shop Orders—Work Orders—Standing Orders—Expense Orders—Construction Orders

RECORD OF ORDERS: Manufacturing Order Register—Tracing Order

FACTORY COSTS: By-Products—Production Records

CONTROLLING ACCOUNTS: Division of Expense—Adjusting Entries

GENERAL EXPENSE AND COST SUMMARIES—

Prepared by CHARLES E. HATHAWAY, Chief Accountant, Fore River Shipbuilding Company

BASIS OF EXPENSE DISTRIBUTION: True Cost—What Is It?—Selling Expense—Expense Based on Cost Price or Selling Price—Expense Based on Cost of Labor or Material—Conclusions

METHODS OF DISTRIBUTION: Man-Hour Rate Method—Machine-Hour Rate—Percentage

PERCENTAGE METHOD EXEMPLIFIED: Productive Labor — Non-Productive Labor—Expense and Production Cost Ledgers—Period for Comparisons—Pay-Rolls Dissected—Departmental Expenses—General Expense—Power—Productive Labor and Expense Compared—How to Use Percentages—Even Percentages May be Used—Journal Entry for Distribution—Expense Ledger—Results of Distribution—Undistributed Balances—In Conclusion

OPERATING EXPENSE STATEMENTS: Lengthy Statements Undesirable—Tabulate Essentials—What Statement Should Show—Comparative Figures—Source of Data Used—Expense Manufacturing Departments—General Expense Statement—Statements for Foremen—Charts—In Conclusion

COST SUMMARIES—COLLECTING COST DATA: Material Costs—Material Cost Reports—Labor Costs—Job Costs—Comparative Cost Records

CONTINUOUS PROCESS FACTORIES: By-Products

CONTROLLING ACCOUNTS: Controlling Account Entries

MACHINE SHOP MANAGEMENT—Prepared by OSCAR E. PERRIGO, M. E., Consulting Mechanical Engineer

MANUFACTURING CONDITIONS AND DEVELOPMENT: Early Mechanics—Industrial Freedom—Development of the American Industry—Tools of the Early Mechanic—Relations of Capital and Labor—Combinations of Capital—Betterment of Industrial Conditions

METHODS OF MODERN MANUFACTURING: Interchangeable Manufacturing — Modern Meaning of Shop Management—A Typical Manufacturing Plant—Organization of Manufacturing Plant—Official Communications—Successful Management

SHOP METHODS AND RECORDS: Individual Record of Standing — The Employment Agency—Time Keeping—Time-Card Forms—Methods of Paying Employees—Production Orders—Plant Orders—Storing and Issuing Stock and Materials—Follow-up Method for Tracing Orders—Tool-Room Methods

COST ANALYSIS ENGINEERING—Prepared by R. T. DANA, Chief Engineer, Construction Service Company; and H. P. GILLETTE, C. E., Consulting Engineer

THE SCIENCE OF MANAGEMENT: Individual Incentive—Dispensing with Gang Work—Effect of Prompt and Sufficient Reward—Educational Supervision—Subdivision of Duties—Opposition to Change

COST GETTING: Time-Keeper and Note-Book—Punch-Cards—Cost Distribution—Process Cost Subdivision—Output—Cost Showing—Checking by Charts—Cost Keeping—Estimates on Ledger Items (Labor, Materials, Rent, etc.)

COST REDUCTION: Effects of Weather and Accidental Conditions—Stimulating the Men—Discharges—Bonus System—Bulletin Board Posting—Early Hours—Foremen—Discipline—Labor-Saving Devices—Introduction of New Methods—Unbalanced Bids—Old vs. New Machinery—Standard Instructions—Chronological Charts

AMERICAN SHORTHAND SYSTEM—Prepared by JOSEPH M. CARNEY, Official Circuit Court Reporter, Milwaukee, Wisconsin

Part I

CONSONANTS AND VOWELS: Consonants—Joining Consonants — Vowels — Positions of Consonants—Vowels between Strokes—Circles and Loops—Simple Word Signs

THE HOOKS: H-Tick—W-Hook—Y-Hook—Phrasing—Half and Double Lengths—L-Hook—R-Hook—Special Vocalization—F-Hook—N-Hook—Tion and Tive Hooks—Rel and Ler Hooks

Part II

CUMULATIVE PHRASING: Circle, Loop and Double Length—R- and L-Hook—F- and N-Hook—Prefixes—Suffixes—Omissions—Numerals

Part III

SHORTHAND AND PUNCTUATION: Proper Names—Names of States and Territories—Names of Cities

SPECIAL PRACTICE WORK: Agreement for Warranty Deed—Final Decree for Specific Performance of Agreement—Charter of Insurance Company—Jury Instructions

DEPARTMENT OF COLLEGE PREPARATORY

(Opened to students in 1903)

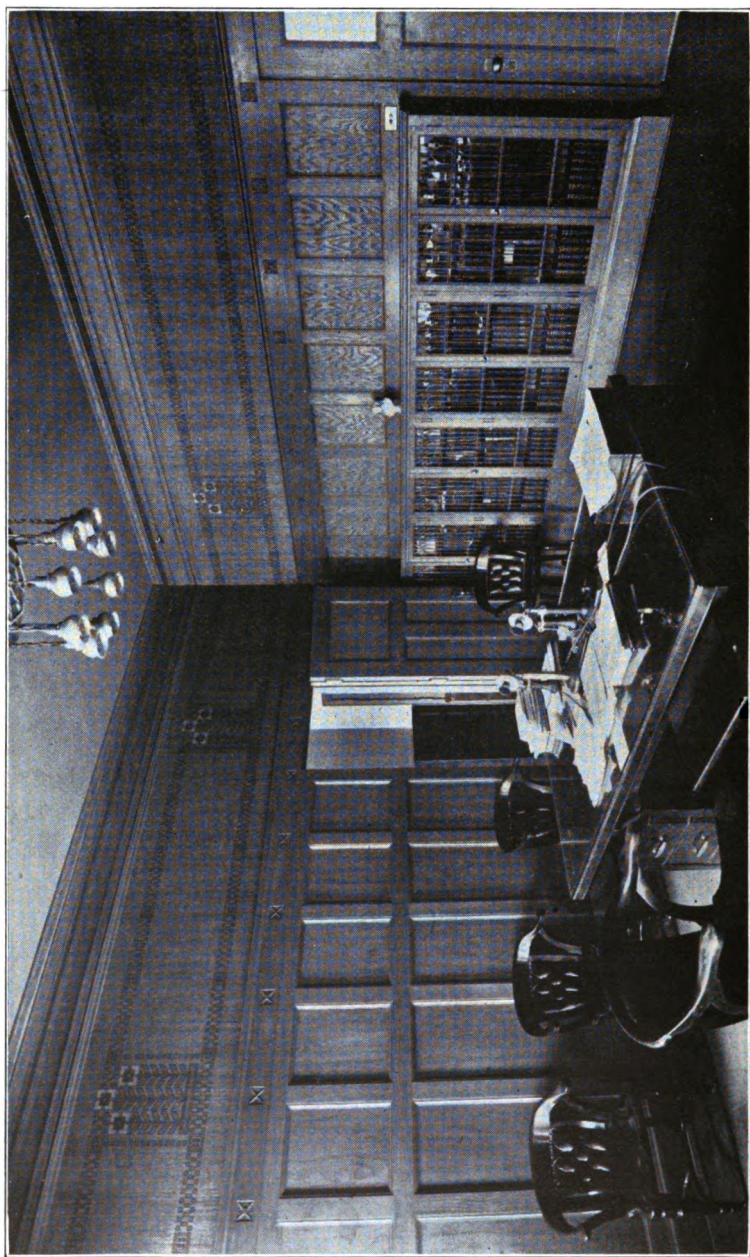
NOTE: If the prospective student will read carefully the descriptions of the different courses, as given below, he will be able to choose wisely, and will save time and unnecessary correspondence.

ENGINEERING PREPARATORY

Outline on page 211

A complete course preparing for entrance to technical schools, and including the subjects usually offered in the preparatory courses of high and preparatory schools. Covers a clear treatment of elementary mathematics; the fundamentals of mechanical drawing, with practice in the preparation of working drawings, and the representation of various parts and types of machines; instruction in the mathematical branches necessary for engineering work; thorough training in the grammar and rhetoric of the English language, with special attention to composition and letter writing; the reading and study of selected English masterpieces; elementary French and German, including grammar, translation and pronunciation; ancient history, from the beginning of history to the fall of the Roman Empire; United States history, from the discovery of America to the present day; the fundamentals of organic and inorganic chemistry, including the performance of 144 laboratory experiments; the fundamentals of physics, including 50 laboratory experiments; the elements of botany, studied from actual plant forms with the aid of only a hand magnifier; a general study of astronomy, without the use of instruments.

This course is recommended for every man who is preparing to enter a technical school, or who desires the general education of which it is the equivalent. The course is based upon the entrance requirements of the College Entrance Examination Board, and the work offered is of the standard of that offered in the same subjects by the average high school. The English classics required for reading and study are those selected by the College Entrance Examination Board. The student is given laboratory practice in both physics and chemistry (See page 27). The prospective student will note that he is asked to choose between French and German, and to select from the science offered the number of



Office of President, American School of Correspondence

units required by the college that he has chosen. The value of the subjects offered is given by the unit system, as devised by the College Entrance Examination Board, and adopted by most American colleges. By referring to the table of entrance requirements by units furnished by his own college, the prospective student can readily determine how nearly the work offered meets his needs. The American School guarantees that the student will pass the entrance requirements of any college or technical school, in all subjects in which he does satisfactory work. For the man who did not complete high school, this course offers a general training in mathematics, language, history and science which will enable him to make up the deficiencies in his education.

COLLEGE PREPARATORY

Outline on page 212

A complete course preparing for entrance to a college course leading to the Ph. B. or S. B. degree, and including the subjects usually offered in the preparatory courses of high and preparatory schools. Covers the same general ground as Engineering Preparatory. Omits mechanical drawing and the higher mathematics. Adds the construction, pronunciation and translation of elementary Latin; the reading of Caesar's Gallic War, with a special study of characteristic constructions; the principles, organization and functions of the American government. This course will prepare the student to pass the entrance examinations to a course leading to the Ph. B or S. B. degree; or enable him to make up deficiencies in language, history and the sciences.

SCIENCE

Outline on page 213

A special course in science; the equivalent of high school work in the subjects offered. Covers a clear treatment of elementary mathematics; the fundamentals of organic and inorganic chemistry, including the conduct of 144 laboratory experiments; the fundamentals of physics, including laboratory experiments; the elements of botany, studied from actual plant forms; a general study of astronomy, without the use of instruments; elementary French and German, including grammar, translation and pronunciation;

ancient history, from the beginning of history to the fall of the Roman Empire; United States history, from the discovery of America to the present day; the principles, organization and functions of the American government. Recommended for all who have not had equivalent high school work. Prepares for college entrance examinations in these subjects, or provides general cultural training with emphasis on science.

LITERATURE

Outline on page 214

A special course in history and language; the equivalent of high school work in the subjects offered. Covers thorough training in the grammar and rhetoric of the English language, with special attention to composition and letter writing; the reading and study of selected English masterpieces; the construction, pronunciation and translation of elementary Latin; the reading of Caesar's Gallic War, with a special study of characteristic constructions; elementary French and German, including grammar, translation and pronunciation; ancient history, from the beginning of history to the fall of the Roman Empire; United States history, from the discovery of America to the present day; the principles, organization and functions of the American government. Recommended for all who have not had equivalent high school work. Prepares for college entrance examinations in these subjects, or provides general cultural training with emphasis on the classics.

MATHEMATICS

Outline on page 215

A special course in the mathematical branches required for college entrance, or for handling engineering problems. Covers the fundamental work in fractions, denominate numbers, powers and roots, etc.; algebraic definitions, equations and progressions, through the binomial theorem and simultaneous quadratic equations; the elements of plane geometry, including the solution of problems; fundamental work in solid geometry; trigonometry, through circular functions, and the use of logarithmic tables; a study of graphs. Recommended for all who have not had equivalent high school work. Prepares for college entrance examinations in these subjects.

ENGINEERING PREPARATORY

77 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 207. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
PRACTICAL MATHEMATICS.		GERMAN OR FRENCH (1 unit).	
Practical Mathematics Parts I-III	138	German	216
MECHANICAL DRAWING (2 units).		†Bierwirth: Beginning German, Grammar.	
Mechanical Drawing Parts I-VI.	137	†Schrakamp & Van Daell: Das Deutsche Buch, Reader.	
ALGEBRA (1½ units).		†Schrakamp: Exercises in Conversational German, Reader.	
Algebra Parts I-IV.....	139	French	217
GEOMETRY (1½ units).		†Fraser & Squair: French Grammar.	
Plane Geometry (1 unit).....	139	ANCIENT HISTORY (1 unit).	
Solid Geometry (½ unit).....	139	Ancient History	217
TRIGONOMETRY (½ unit).		†Morey: Outlines of Greek History.	
Logarithmic Tables	139	†Morey: Outlines of Roman History.	
Trigonometry Parts I-II.....	140	UNITED STATES HISTORY (1 unit).	
*Graphs	140	United States History.....	218
ENGLISH (3 units).		†McMaster: History of the United States.	
English Grammar and Rhetoric Parts I-II.....	216	SCIENCE (2 units) chosen from:	
English Classics Parts I-II....	216	Chemistry (1 unit).	
†Addison: The Sir Roger de Coverley Papers.		Elements of Chemistry.....	218
†Burke: Speech on Conciliation with America.		General Chemistry Parts I-VII	218
†Coleridge: Rime of the Ancient Mariner.		†Remsen: College Chemistry.	
†Goldsmith: Vicar of Wakefield; The Deserted Village.		Physics (1 unit).	
†Irving: Sketch Book.		Physics Parts I-VI.....	219
†Lamb: Essays of Elia.		†Millikan & Gale: First Course in Physics.	
†Macaulay: Life of Johnson.		†Millikan & Gale: Laboratory Manual.	
†Milton: Lycidas, Comus, L'Allegro, Il Penseroso.		Botany (½ unit).	
†Scott: Ivanhoe.		Elementary Botany Parts I-II	220
†Shakespeare: Julius Caesar; Macbeth; The Merchant of Venice.		†Bergen & Caldwell: Practical Botany.	
†Tennyson: Gareth and Lynette; Lancelot and Elaine; The Passing of Arthur.		Astronomy (½ unit).	
		Astronomy Parts I-IV.....	220

*Optional work

†Standard textbooks. The list of English classics will be changed and the course of instruction altered to meet different college entrance requirements without extra cost to the student.

Tuition \$155.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

COLLEGE PREPARATORY

70 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 209. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
PRACTICAL MATHEMATICS.		GERMAN (1 unit).	
Practical Mathematics Parts I-III	138	German	216
LATIN (2 units).		†Bierwirth: Beginning German, Grammar.	
First Year Latin.....	217	†Schrakamp & Van Daell: Das Deutsche Buch, Reader.	
†Collar & Daniell: First Year Latin.		†Schrakamp: Exercises in Conversational German, Reader.	
Second Year Latin.....	217		
†Allen & Greenough: Cæsar.		FRENCH (1 unit).	
ANCIENT HISTORY (1 unit).		French	217
Ancient History.....	217	†Fraser & Squair: French Grammar.	
†Morey: Outlines of Greek History.		UNITED STATES HISTORY (1 unit).	
†Morey: Outlines of Roman History.		United States History.....	218
ALGEBRA (1 unit).		†McMaster: History of the United States.	
Algebra Parts I-II.....	139	CIVICS (½ Unit).	
GEOMETRY (1 unit).		Civics	218
Plane Geometry	139	†Forman: Advanced Civics.	
ENGLISH (3 units).		SCIENCE (2 units) chosen from:	
English Grammar and Rhetoric Parts I-II	216	Chemistry (1 unit).	
English Classics Parts I-II....	216	Elements of Chemistry.....	218
†Addison: The Sir Roger de Coverley Papers		General Chemistry Parts I-VII	218
†Burke: Speech on Conciliation with America.		†Remsen: College Chemistry.	
†Coleridge: Rime of the Ancient Mariner.		Physics (1 unit).	
†Goldsmith: Vicar of Wakefield; The Deserted Village.		Physics Parts I-VI.....	219
†Irving: Sketch Book.		†Millikan & Gale: First Course in Physics	
†Lamb: Essays of Elia.		†Millikan & Gale: Laboratory Manual.	
†Macaulay: Life of Johnson.		Botany (½ unit).	
†Milton: Lycidas, Comus, L'Allegro, Il Penseroso.		Elementary Botany Parts I-II	220
†Scott: Ivanhoe.		†Bergen & Caldwell: Practical Botany.	
†Shakespeare: Julius Cæsar; Macbeth; The Merchant of Venice.		Astronomy (½ unit).	
†Tennyson: Gareth and Lynette; Lancelot and Elaine; The Passing of Arthur.		Astronomy Parts I-IV.....	220

†Standard textbooks. The list of English classics will be changed and the course of instruction altered to meet different college entrance requirements without extra cost to the student.

Tuition \$155.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SCIENCE

41 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 209. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I....	138	†Bergen & Caldwell: Practical Botany.	
Practical Mathematics Part II....	138	Astronomy Part I.....	220
Practical Mathematics Part III..	138	Astronomy Part II.....	220
Plane Geometry	139	Astronomy Part III.....	220
Elements of Chemistry.....	218	Astronomy Part IV.....	220
General Chemistry Part I.....	218	German	216
General Chemistry Part II.....	218	†Bierwirth: Beginning German, Grammar.	
General Chemistry Part III.....	218	†Schrakamp & Van Daell: Das Deutsche Buch, Reader.	
General Chemistry Part IV.....	218	†Schrakamp: Exercises in Conversational German, Reader.	
General Chemistry Part V.....	218	French	217
General Chemistry Part VI.....	218	†Fraser & Squair: French Grammar.	
General Chemistry Part VII.....	218	Ancient History	217
†Remsen: College Chemistry.		†Morey: Outlines of Greek History.	
Physics Part I.....	219	†Morey: Outlines of Roman History.	
Physics Part II.....	219	United States History.....	218
Physics Part III.....	219	†McMaster: History of the United States.	
Physics Part IV.....	219	Civics	218
Physics Part V.....	219	†Forman: Advanced Civics.	
Physics Part VI.....	219		
†Millikan & Gale: First Course in Physics.			
†Millikan & Gale: Laboratory Manual.			
Elementary Botany Part I.....	220		
Elementary Botany Part II.....	220		

†Standard textbooks

Tuition \$100.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

LITERATURE

40 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 210. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
English Grammar and Rhetoric Part I	216	First Year Latin.....	217
English Grammar and Rhetoric Part II	216	†Collar & Daniell: First Year Latin.	
English Classics Part I.....	216	Second Year Latin.....	217
English Classics Part II.....	216	†Allen & Greenough: Cæsar.	
†Addison: The Sir Roger de Coverley Papers.		German	216
†Burke: Speech on Conciliation with America.		†Bierwirth: Beginning German, Grammar.	
†Coleridge: Rime of the Ancient Mariner.		†Schrakamp & Van Daell: Das Deutsche Buch, Reader.	
†Goldsmith: Vicar of Wakefield; The Deserted Village.		†Schrakamp: Exercises in Conversational German, Reader.	
†Irving: Sketch Book.		French	217
†Lamb: Essays of Elia.		†Fraser & Squair: French Grammar.	
†Macaulay: Life of Johnson.		Ancient History	217
†Milton: Lycidas, Comus, L'Allegro, Il Penseroso.		†Morey: Outlines of Greek History.	
†Scott: Ivanhoe.		†Morey: Outlines of Roman History.	
†Shakespeare: Julius Cæsar; Macbeth; The Merchant of Venice.		United States History.....	218
†Tennyson: Gareth and Lynette; Lancelot and Elaine; The Passing of Arthur.		†McMaster: History of the United States.	
		Civics	218
		†Forman: Advanced Civics.	

†Standard textbooks. The list of English classics will be changed and the course of instruction altered to meet different college entrance requirements without extra cost to the student.

Tuition \$100.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

MATHEMATICS

13 Instruction Books

SUBJECTS IN THE COURSE

NOTE: For description of this course, see page 210. For synopsis of any subject, see page indicated by number following title.

Subject	Page	Subject	Page
Practical Mathematics Part I...	138	Plane Geometry	139
Practical Mathematics Part II...	138	Solid Geometry	139
Practical Mathematics Part III...	138	Logarithmic Tables	139
Algebra Part I.....	139	Trigonometry Part I.....	140
Algebra Part II.....	139	Trigonometry Part II.....	140
Algebra Part III.....	139	*Graphs	140
Algebra Part IV.....	139		

*Optional work

Tuition \$40.00 Payable \$5.00 a Month

NOTE: See section on "Terms of Enrollment," page 27.

SYNOPSIS OF SUBJECTS IN

COLLEGE PREPARATORY DEPARTMENT

ENGLISH GRAMMAR AND RHETORIC—Prepared by
WILLIAM W. MANNING, Instructor in English, Armour Institute
of Technology

Part I

GRAMMAR. WORDS: Parts of Speech: Nouns—Pronouns—Adjectives—Verbs—Adverbs—Participles—Prepositions—Interjections—Conjunctions. Inflections: Verbal and Phrasal—Case and Number in Nouns and Pronouns—Comparison of Adjectives and Adverbs—Conjugation of Verbs—Finite Verbs and Verbal Forms

SENTENCES: Classification: Simple, Complex, and Compound—Declarative, Imperative, Interrogative—Structure: Subject and Predicate—Other Parts—Proposition, or Clause—Relation to Sentence. Classification: Adjective—Adverbial—Substantive. Use of Connectives—Special Idiomatic Constructions

Part II

ANALYSIS AND PARSING: Graded Practice Work

COMPOSITION. WORDS: Sources of Vocabulary—Etymology—Choice of Words—Use of Dictionary—Redundancy—Spelling—Capitalization

SENTENCES: Structure—Canons of Construction—Unity of Subject-Matter—Arrangement of Words in Sentence—Loose and Periodic Sentences—Length of Sentence—Punctuation

PARAGRAPHS: Relation to Sentence—Topic Sentence—Development by Repetition—Enumeration of Particulars—Concrete Instances—Comparison—Contrast—Cause and Effect—Qualities of Paragraph—Unity—Coherence—Proportion

WHOLE COMPOSITIONS: Relation to Paragraph and Sentence. Sorts of Composition: Description—Narration—Exposition—Argument. Use of Figurative Language: Embellishment. Qualities of Style: Clearness—Force—Elegance

GENERAL PRACTICE WORK: Paragraph Writing—Indentation—Development of Vocabulary—Correction of Faulty Sentences—Choice of Words—Letter Writing—Commercial Paper—Development of Story Outlines

ENGLISH CLASSICS—Prepared by FRED MONROE TISDEL,
Ph. D., Assistant Professor of English, University of Missouri

Part I

BOOKS FOR GENERAL READING AND STUDY: Shakespeare: The Merchant of Venice; Julius Caesar—Addison: The Sir Roger de Coverley Papers—Goldsmith: The Deserted Village; The Vicar of Wakefield—Scott: Ivanhoe—Irving: Sketch Book—Lamb: Essays of Elia—Coleridge: The Ancient Mariner—Tennyson: Gareth and Lynette; Lancelot and Elaine; The Passing of Arthur

Part II

BOOKS FOR CRITICAL STUDY: Shakespeare: Macbeth—Milton: Lycidas; Comus; L'Allegro; Il Penseroso—Burke: Speech on Conciliation with America—Macaulay: Life of Johnson

GERMAN—Prepared by LOUIS C. MONIN, Ph. D., Dean of Cultural Studies, Armour Institute of Technology

PRONUNCIATION. GERMAN SCRIPT. LESSONS: Present and Past Indicative of Weak Verbs—Present and Past Indicative of Strong Verbs—Present and Past Indicative of Haben Sein Werden—Order of Words—The Definite Article Der—Words Like Der—The Indefinite Article Ein and its Group—Prepositions with Dative or Accusative—Personal Pronouns—The Pronouns Der, Wer, Was—Substitutes—Adjectives: Strong Inflection—Adjectives: Weak Inflection—Pronominals: Strong and Weak—Adjective Inflection: Exceptions—Comparison—Substantive Adjectives—Numerals—Verbs: Principal Parts—The Perfect and Pluperfect Indicative—Irregular or Mixed

Nouns—The Future Indicative—Irregular Weak Verbs—The Imperative—The Model Auxiliaries—Wissen—Compound Verbs with Inseparable Prefixes—Compound Verbs with Separable Prefixes—Compound Verbs with Doubtful Prefixes—The Passive Voice—Reflexive and Impersonal Verbs—The Subjunctive in Conditional Sentences—The Subjunctive in Indirect Statement

INFLECTIONS: Verb Inflections—Odd or Unclassified Inflections—Complete Strong Inflection—Defective Strong Inflection—Noun Inflections—Double Inflection, Strong and Weak

USES AND CONSTRUCTIONS: Articles: Nouns of Measure—Names of Cities—Cases—Pronouns—Comparatives and Superlatives—Numerals—Verbs—Adverbs—Prepositions—Conjunctions—Order of Words—List of Strong Verbs according to Vowel Change—Alphabetical List of Strong and Irregular Verbs—Vocabularies

FRENCH—Prepared by THEODORE L. NEFF, Ph. D., Assistant Professor of French, University of Chicago

PRONUNCIATION: Definite Article—Gender—Case—Agreement in Sentence—Etre and Avoir—Indefinite Article—Possessive Adjective—Verbs—Interrogation—Personal Pronoun Subjects and Objects—Plurals of Nouns and Adjectives—Negation—Partitive Nouns and Pronouns—General Noun. Auxiliary Verbs. Avoir and Etre—Aller and Venir—Demonstrative Adjectives—Savoir, Devoir, Pouvoir, Voir, Vouloir—Use of Voici, Voilà and Il y a—Use of On—Faire and Connaitre—Adjectives—Interrogative Adjectives—Full Conjugation of Avoir and Etre—Use of Tenses—Full Conjugation of Regular Verbs. Comparison of Adjectives and Adverbs—Irregular Verbs—Agreement of Past Participle—Pronouns—Reflexive Verbs—Disjunctive Pronouns—Impersonal Verbs—Infinitives—Present Participle—Subjunctive after: Verbs of Willing or Commanding; Expressions of Emotion, Necessity; Conjunctions—Sequence of Tenses—Possessive Pronouns—Indefinite Pronouns: On, Quelqu'un, Quelqu'un, Personne, Rien, Tout—Numerals

USES AND CONSTRUCTION. ARTICLES: With Partitive and General Nouns; Proper Names; Names of Countries; Nouns of Measure or Quality; Numeral Adjectives; Certain Prepositions; Idiomatic Expressions—Order of Words—Vocabularies

FIRST YEAR LATIN—Prepared by CHARLES H. VAN TUYL, A. B., Assistant Dean and Instructor in Latin, University High School, University of Chicago

PRONUNCIATION: Sounds of Vowels, Consonants and Diphthongs—Division into Syllables—Accent

INFLECTION AND SYNTAX: Principle—Parts of Speech—Person—Number—Gender—Case—Voice—Mode—Tense—Agreement—Subject and Predicate—Direct and Indirect Object—Declension of Nouns, Pronouns and Adjectives—Conjugation of Regular and Irregular Verbs—Declension of Participles—Indefinite Pronouns—Comparison of Adjectives and Adverbs—Uses of Participles—Syntax—Ablative Absolute—Ablative and Dative with Special Verbs—Irregular Nouns—Numerals—Question—Subjunctive Mode—Clauses of Purpose, Result, Cause, Concession, Time and Condition—Subjunctive of Fact, of Mild Command or Entreaty—Quod Clause of Fact—Impersonal and Reflexive Verbs—Active and Passive Periphrastic Conjugations—Supine—Gerund and Gerundive—Sequence of Tense—Historical Present

SECOND YEAR LATIN—Prepared by CHARLES H. VAN TUYL, A. B., Assistant Dean and Instructor in Latin, University High School, University of Chicago

HISTORICAL: Life of Caesar—Life of Pompey—Roman Army at Time of Caesar

THE TEXT: Reading of Caesar's Gallic War, Books I-II-III-IV—Vocabulary of Caesar and English Derivatives—Characteristic Constructions of Caesar

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